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ORIGINAL ARTICLES.

THE PATHOLOGY OF HAY FEVER.

Read in the Section on Psychological Medicine and Nervous Diseases, Ninth International Medical Congress.

BY S. S. BISHOP, M.D.,

OF CHICAGO.

SYNONYMS: Nervous catarrh; nervous coryza; hay asthma; rose cold; June cold; July cold; peach cold; summer catarrh; autumnal catarrh; pollen poisoning. Latin equivalents: Catarrhus æstivus; coryza vaso-motoria periodica. French equivalents: Catarrhe d'été; catarrhe de foin. German equivalents: Frühsommer-catarrh; Heu-asthma. Italian equivalent: Asma dei mietitori.

Goethe has tersely said: "If a man write a book let him set down only what he knows." In medical literature there is much writing of the negative sort. But if a man take an inventory of his mental stock he is forced to admit that a large percentage of it consists of negations. The object of philosophy is the knowledge of phenomena in all their relations, and it cannot be attained independently of theories and hypotheses. Not less indispensable are the same methods of investigation and reasoning, and not less latitude must be enjoyed, in discussing a subject of the peculiar nature of the one which furnishes the title of this paper. One must divest the mind of preconceived opinions before it is free to apprehend causes and conditions in their true proportions and relations. Much has been written concerning biology, electricity, phrenology, magnetism; yet who has mastered the principle we call life? What Æolus restrains the electric currents of the world? Who measures the molecular activity of the brain when his own thought is evolved—labels this atom, "love," or that, "causality?" Who can define odylic force, and the law of its operation? But, though our path is beset with discouragements, and our work of investigation is hemmed in by the natural restrictions of human thought, and the limitations of our knowledge of pathological processes, the laboratory, lens and logic may yet triumph.

The name hay fever is a misnomer. It is employed to designate a condition to which numerous other terms have been applied with equal fitness. To the array of names already in use, ill-chosen because they are misleading, I have had the temerity to add another. In a published lecture, delivered in the Chicago Medical College in 1885, I proposed the term nervous catarrh. Since then several authors have adopted this expression. One writer, however, calls it nervous coryza; but coryza is from the Greek κόρυζα, signifying only a running at the nose, while the word catarrh, from καταῤῥέω, admits of a much broader application and, with properly modifying adjectives, may be used to designate affections of various mucous membranes. Coryza is a specific term; catarrh is generic, and obviously is the more correct one to characterize a disease which is not confined to the nasal cavities. Nervous catarrh is so comprehensive a term, and is so tersely suggestive of the pathology and symptomatology of certain neurotic derangements, as to be susceptible of a much larger usefulness than has been accorded it. To illustrate: There is a truly nervous intestinal catarrh which attacks and leaves a certain class of individuals of the nervous temperament as suddenly as an attack of hay fever does. I have known a musician to suffer from severe attacks of diarrhœa just previous to his appearance before an audience which he was announced to entertain. Immediately after his performance all symptoms of intestinal disturbance would vanish, only to return again at his next appearance in public. I might cite a case of an orator of the evening who was similarly afflicted. The nervousness induced by the contemplation of addressing his audience would so react on the nervous supply of the intestinal tract as to cause sudden and copious diarrhœa. No sooner would the oration be finished than all unpleasant symptoms ceased. We have nervous dyspepsia occasioned by mental emotions. A certain combination of objective and subjective causes operating on one individual produces morbid phenomena referable to the mucous membrane of the turbinated bodies, resulting in an attack of hay fever—nasal nervous catarrh. In another, the seat of the resulting manifestations will be in the bronchial mucous membrane, eventuating in an attack of asthma—bronchial nervous catarrh. In yet another, the intestinal mucous coats are the scene of this breaking of a nerve-storm, resulting in copious watery discharges—intestinal nervous catarrh. All these are undoubtedly coördinate morbid conditions of the nervous system, finding expression in exaggerated and perverted functional activity.

The pathology of this disease has been evolved from a chaotic state, in which it remained from the time of its first description by Dr. Bostock, of Lon-

don, in 1819, until the last decade. Instead of looking upon hay fever as a simple congestion or inflammation of the Schneiderian membrane, as eminent English authorities have in the past, and yet do, prominent American authors favor the neurotic theory. In this connection it is interesting to note that a recent writer for the *Lancet* treats of common nasal catarrh as a reflex neurosis and, in support of his position, adduces numerous instances in which purely nerve-remedies succeeded in arresting attacks of acute coryza.

Although I maintain that this malady is essentially due to an abnormal susceptibility of nervous tissue, I do not claim that there exists any organic lesion of the nervous centres, to which the disease is attributable. Being a functional disturbance, it never destroys life, and no opportunity is afforded the neuropathologist to make post-mortem observations. But if the affection be a reflex neurosis, can we hope for microscopy to determine with precision the condition of nervous structure which primarily constitutes the disease?

If we examine the arrangement of the nervous supply of the respiratory passages we find that it is favorable to the existence of reflex nervous phenomena. One sympathetic nervous centre, the sphedopalatine ganglion, supplies branches to the lining membrane of the nose, pharynx and Eustachian tubes. It has a motor, a sensory, and a sympathetic root. It communicates with the facial and pneumogastric nerves, thus uniting in the closest sympathetic connection the nose, pharynx, middle ear, larynx and bronchi. Furthermore, the Schneiderian membrane is continuous with the lining membrane of the nasal duct and eyelids, the pharynx, Eustachian tubes and tympana, the larynx, trachea and bronchial tubes. Ablation of the spheno-palatine ganglion sets up a severe catarrhal state of the Schneiderian membrane. A congestion once started in this structure may extend with unobstructed facility to the contiguous membranes, very like the spreading of an erysipelatous inflammation from one area of the skin to another. But the continuousness of the membranes throughout these various organs does not satisfactorily account for all the symptoms produced in one part by impressions upon another. Certainly an inflammation in the throat may extend along the Eustachian tube to the tympanum, but there is no such reason to account for the sudden transitory tinnitus aurium which occurs in some persons immediately upon the ingestion of a draught of cold water or the inhalation of tobacco smoke, or for the cough which is occasioned by the contact of instruments with the external auditory meatus or with the inferior turbinated body or the septum nasi, or for the paroxysm of sneezing produced by irritating the scalp. All these symptoms are examples of reflex nervous impulses, and these intimate sympathetic relations between various portions of the animal economy exhibit themselves with exceptional force in patients of nervous temperament.

The theory that lesions situated in the nasal cavities may be responsible for the existence of common asthma, has lately acquired a considerable following in America. But this is directly in the line of our reasoning, for it argues the reflex neurotic character of a disease which possesses close kinship to hay fever not only in its etiology, symptomatology and therapeutics, but in the morphology of its secretions. The manner in which exciting causes bring about attacks in hay fever is much the same as in the case of asthma. In a hay fever subject let brilliant rays of light fall upon the retina, or dust impinge upon a sensitive area of mucous membrane, and what occurs? The end organs of the sensory nerves supplying the part affected, being over-sensitive to the presence of that particular kind of stimulus, are instantly thrown into a state of intense excitation, or irritation. Immediately the impression is flashed along the sensory nerves to a nervous centre—brain or ganglion; thence, changed to motor impulse, it is switched back, on the one hand, along the vaso-motor nerves to the blood-vessels of the seat of irritation, causing dilatation, engorgement, swelling and flux; and on the other hand, along the pneumogastric and sympathetic nerves to the muscles concerned in the act of sneezing, and, through extensive sympathetic nervous relations, all the respiratory tract and its connections may participate in the disturbance and become involved in a fully developed attack of hay asthma—sneezing, coughing, wheezing, nasal flux, expectoration and lachrymation.

Thus it appears, from the manner in which paroxysms of hay fever are started and developed, that there are three conditions upon which the existence of the disease depends: First, abnormally susceptible nerve centres; secondly, hyperæsthesia of the peripheral termini of the sensory nerves; and thirdly, the presence of one of a large variety of irritating agents. Exclude one of these conditions and the paroxysms are prevented. Allay the susceptibility of the nervous centres by certain cerebral sedatives and an attack is averted or arrested. Anæsthetize the nervous supply of the over-sensitive areas and the result is the same. Remove the patient beyond the reach of exciting causes and he is as comfortable as any mortal.

Another fact in support of the theory that this is a functional disease of the nervous system is its hereditary character. I might quote many illustrative cases were there time, but three representative ones will suffice: In Dr. Morrill Wyman's family there were six sufferers from hay fever besides himself. In the family of the Rev. Henry Ward Beecher there were two besides himself, and in the family of Chief Justice Shaw there were six members who had different forms of this distressing malady. To be sure, heredity alone does not establish a neurotic character; but, taken in connection with all the other facts in the case, it is a weighty argument in support of the assertion that this is a constitutional disorder of a neurotic type.

Again, the nervous temperament is the predominating one in this class of patients—an argument which needs no elucidation. The same may be remarked concerning asthmatic sufferers, and the admitted kinship of the two diseases only serves to strengthen my position in this discussion. The periodicity of the disease points to nothing if not to

its nervous nature, for one cannot conceive how the pollen theorists, from their point of view, can reconcile this feature of the complaint with their own doctrine. Is it reasonable to assume that the pollen of various plants which give rise to attacks in different individuals will be set free to float away on their fructifying pilgrimages on exactly the same day, and at nearly the same hour, each recurring year, and that they will reach the nostrils of sufferers in their varying localities and situations and vocations simultaneously year after year? The variations that occur in the yearly advance of the seasons preclude this hypothesis. And again, the identity of the different forms of the malady strengthens the nerve theory, while it weakens the pollen argument, for it shows that the disease exists under conditions which are the least favorable to the operation of pollen; in fact, where the pollen theory is inadmissible—in the winter and spring. I do not wish to convey the impression that I undervalue the importance of pollen as an exciting cause, but I do wish to be understood as maintaining that it constitutes but one of three factors which render the existence of the disease possible.

Other arguments that may be briefly mentioned are the suddenness of the onset and disappearance of attacks; the fact that the most potent palliatives are nerve sedatives, tonics and stimulants; and that mental emotions and physical exertion may prevent or arrest paroxysms.

The chief argument urged against the nerve theory is that many hay fever patients have diseased nasal cavities. But we may say the same of that much larger proportion of our population who have no knowledge of hay fever. That we should find nasal hypertrophies, etc., concurrent with hay fever, is not surprising in this catarrh-producing climate. Indeed, the diseased turbinated tissue may be a coincidence or sequence, rather than the cause, for it is natural to suppose that years of constantly recurring attacks of even a functional disturbance of the vaso-motor supply of these parts would result in a passive hyperæmia which would eventuate in proliferation of cells in the mucous and submucous tissues, and the growth of hypertrophies which might serve as a nidus for the reception and retention of irritating agents. But the argument that this condition is responsible for hay fever in infants, youths, and even in adults in whom there is no evidence of inflammatory changes before or between attacks, is not tenable. The paroxysms do not so much resemble symptoms of an inflammation as they do an irregular and explosive discharge of a superfluity of nervous force—a nerve storm, if the expression may be permitted. It has been claimed that destructive treatment of the sensitive areas in the nasal cavities would permanently cure hay fever, and many cases have been so treated by American physicians during the last three years. However, the most sanguine practitioners of this method have recently confessed disappointment at the results. Cases that were supposed to have been cured still suffer. Others are only slightly benefited, while a few are worse for the operations. So far as I have been able to obtain definite data, they demonstrate that not one-half the number treated are claimed to be cured. This points to the fact that it is not a simple local inflammatory disease. If it were the treatment should be attended with success. For reasons which I have set forth one cannot expect this method to cure all; but, granting that it may cure many, the nerve theory would not suffer in the least by the admission, for it assumes a pathological condition of the receptive end organs of the nerves as well as of the perceptive nerve centres. Eliminate the susceptibility of either the central or peripheral nervous system, and you remove an essential element in the disease—destroy its entity. But what shall we say of that other large proportion of patients in whom paroxysms are produced by irritation of the retina, the scalp, etc., or by chilling of the skin? Are we to be logical and, reasoning from analogy, must we destroy the sensitive area, the retina, enucleate our patients' eyes, scalp or skin them! Yet, if you follow the reasoning of this school of theorists to its logical conclusion, it will lead you to this *reductio ad absurdum*.

The neurotic theory is supported by the nature of the following causes: Electric and gaslight; overexertion; anxiety; indigestion; dampness; chills; camphor; gases; feathers; perfumes; odors from animals; dry, hot and impure air; various kinds of fruit, etc. It will be observed that pollen and dust do not necessarily enter into the causative nature of these excitants.

This theory receives support also from the fact of the excessive irritability and nervousness which patients experience just preceding and during attacks. The coördinate action of muscles is affected, and they complain of feeling jerky and ill-tempered for the time.

In studying this disease it should not be forgotten that the statements of sufferers relative to the history and phenomena of their maladies should be given greater credence than is usually accorded the assertions of other classes of patients, inasmuch as they enjoy the distinction of being superior to the average in intelligence and culture. This is far from being an idle assertion, for it voices the experience of the best authorities and is borne out by a reference to the list of membership of the United States Hay Fever Association.

I cannot consider the treatment of this subject as approaching completeness without referring briefly to two other important points. Microscopists have been recently examining the nasal and bronchial secretions from hay fever and asthmatic sufferers, with the result, it is claimed, of establishing the kinship of the two diseases by demonstrating the presence in both of products called gravel. It is believed that this so-called gravel accumulates in the secretions of the respiratory passages, and acts as a local irritant, in the same manner that any foreign body would.

The force and analogy apparent in the following facts relating to neuroses of the skin serve to emphasize the truth in the nerve theory: Intense itching over the surface of the whole body may be produced by morbid alterations in the ovaries or uterus, anomalies of menstruation, diseases of the kidneys, liver, etc. Neumann says: "There is no doubt that

a large proportion of cutaneous diseases depend upon disorders of the vaso-motor nerves which cause certain derangements of circulation in the arteries, veins and cutaneous glands. Anæmia and hyperæmia of the skin happen from vaso-motor irregularities, some from the brain, some from the spinal cord, or from the action of cold, or the electric current, etc." Now, since it is admitted that there are both immediate and reflex functional nervous disorders of the skin, with what show of reason can it be denied that there are similar neurotic disturbances of that other skin which covers the interior surfaces of the body? The latter membrane is more vascular, more delicate, more sensitive, more highly organized than the skin. It possesses susceptibility to all agents which affect the skin, and to many others besides. For example, noxious gases, to which the skin is insensible, will irritate the mucous lining of the respiratory organs. The same laws that govern the action of the vaso-motor nerves of the skin also regulate the vaso-motor supply of the mucous membranes. If itching and burning of the skin are produced by morbid alterations in the ovaries, so is pruritus urethræ produced by disease of the bladder; pruritus nasi is generally accepted as a sign of worms in children; urticaria results from irritation of the gastric or intestinal mucous membrane; so may asthma arise in the same manner or from an irritant applied to the post-nasal mucous surface; ear-cough is occasioned by contact of instruments with the skin of the external auditory canal; and hay fever paroxysms result from irritation of the retina, the upper lip or the scalp, or from chilling the skin.

Finally, all the facts in our possession force us to the conclusion that the weight of testimony is in favor of the doctrine that hay fever is a reflex functional nervous disease.

719 W. Adams St.

THE PORTAGIOUSNESS OF PHTHISIS.

Read before the Medical Press Association, of St. Louis, January 30, 1888.

BY WILLIAM PORTER, M.D.,

PHYSICIAN TO ST. LUKES AND TO THE PROTESTANT HOSPITAL; CONSULTING PHYSICIAN TO THE ST. LOUIS CITY HOSPITAL, ETC.

Before entering upon the discussion of the subject proposed, permit me brief reference to the terms employed. I have chosen the word portagious because it conveys a more exact idea of the manner of transmission of phthisis for reasons hereinafter mentioned, than either contagious or infectious. In this writing the term phthisis will be used to denote that class of disease to which belongs the large majority of cases of slowly progressive pulmonary inflammations, *i.e.*, chronic tubercular phthisis.

Pardon me if I decline to enter into a discussion of the relation of the bacillus to phthisis. After somewhat closely following the investigations of recent years, I cannot conclude whether the bacillus is the cause or product of tuberculosis. Certainly no positive therapeutical gain has yet been made, based upon the hypothesis that the microbe is a factor of phthisis *per se*, but rather is our advance continually upon the old lines of aiding assimilation, diminishing waste and caring for the hygienic surroundings. So far as our present knowledge extends, the bacillus is to phthisis as smoke to fire; it may indicate its existence, but neither incites nor intensifies the combustion. Whatever the development of theory may do for us in the future, let us this evening limit ourselves to deductions made from recorded facts.

The question I would ask you is: Have we reasonable evidence that the products of, or emanations from a phthisical subject, may be carried to, received by, and cause like disease in one previously free from phthisis?

Believing that the weight of testimony is with the affirmative I will offer the results of:

1. Some experiments made as to the transmissibility of phthisis.
2. The practical experience of others, and
3. Personal observations.

1. In experiments made by Tappeiner, in 1883, tuberculous sputa being inhaled by eighteen healthy animals, tubercles in both lungs, and pleura were afterwards found in seventeen. That record of Koch's work, found in the second volume of the Imperial Health Reports, shows that after the inhalation of material from phthisical cavities, the rabbits and guinea-pigs under observation, had within twenty-eight days, tubercles throughout the lungs of all, and in the liver and spleen of some. It is true that many of the masses in Koch's description resemble caseous broncho-pneumonia, but this is also to the point according to the definition of phthisis which we hold.

Wargunin, of St. Petersburg, in 1884, showed by experimental research in three series of cases, that the nodules of broncho-pneumonia resulted not only from the inhalation of phthisical sputa, but also from other foreign substances.

The proposition that tuberculous phthisis is an infective malady was endorsed twenty years ago by Villemin and Chauveau, who labored to demonstrate that inoculation of tuberculous matter only, would produce tubercle, while Sanderson, Fox and others, claimed the same results from the introduction of other material.

Martin, of Paris, within the last few years, however, after a number of experiments, which I may not detain you to describe, (*Rev. de Médicine*), seems to have established the following conclusions:

(*a*) Tubercle inoculated locally, determines, after incubation, and after a variable time, general tuberculosis, and the virus seems to acquire increased activity by inoculation in series of animals of the same or allied species.

(*b*) But, if we inoculate matter obtained from those tubercles secondary to the injection of non-tubercular foreign bodies, it never gives rise to general tuberculosis; and after two, or at most, three terms of the series, it even loses the power of producing a local inflammation.

Though we were to admit that Wargunin, Sanderson, and Fox have found tubercle to result from inoculation with non-tuberculous material, we would still be justified in maintaining that the inhalation and absorption of phthisical matter is a potent cause of phthisis.

The carefully conducted investigations of Cadeac and Mullet recently published, show that while no positive result was obtained from compelling rabbits and guinea-pigs to inspire air exhaled by phthisical patients, yet when air was used collected from near the beds of hospital inmates, the air presumably carrying particles of sputa, two out of twelve guinea-pigs acquired tubercle.

Permit me to refer to an experiment of my own:

Three healthy guinea-pigs were selected. One was inoculated with phthisical sputa, and placed in a small box with one of the others. The third was confined in a box in an adjoining room. They were cared for alike and had similar food. In four weeks the first one died, and the examination showed tubercle in the lungs, and a large cheesy gland near the point of inoculation. Three weeks after the second animal sickened and was killed. I found small granulations scattered through both lungs, at some points aggregated, and in the right lung were two nodules, having a soft cheesy centre. The third guinea-pig, examined three months later, had no evidence of tubercle or other disease.

The only experiment, so far as I know, upon a human subject was made by Drs. Demet, Pararky, and Zallories, of Syra, in Greece, who inoculated, with sputa from a phthisical patient, a man whose history afforded no suspicion of tubercle, and whose lungs were healthy, but who had gangrene due to femoral embolism and who would not permit amputation. In three weeks auscultation revealed evidences of disease at the right apex. Thirty-eight days after the inoculation, the man died from gangrene, when it was found that the upper right lobe had seventeen small tubercles and two granulations in the apex of the left lung.

2. *What has been the practical experience of others?*

One of the most valuable labors of the Collective Investigation Committee in London, is that relating to the transmission of phthisis. While the majority of replies to inquiries were unsupported negatives, 261 answers coming from physicians in family practice affirmed the proposition that phthisis may be communicated from the sick to the well, and evidence was given in proof of the statement. One hundred and ninety-two observers recorded cases where both husband and wife became phthisical, in 130 cases there being no phthisis in the family of the one to whom the disease was thought to have been transmitted.

Some of these cases were very interesting. Dr. Spriggs, of Great Bedford, instanced the case of

Miss R., aged 48, a dressmaker, who, living in rather a lonely cottage at C., Bedfordshire, had three apprentices, young girls from 17 to 19 years of age, not related, from three adjoining villages, who took it in turn to remain in the house and sleep with her, each one week at a time. During their apprenticeship, Miss R. was taken with phthisis, of which she died. In less than two years afterwards, all three apprentices died of phthisis, although in the family history of each, no trace of phthisis existed; and the parents, brothers and sisters of two are alive and well at this time.

Another interesting case is related by Mr. G. F. Blake, of Mosely, Birmingham, in which a perfectly healthy child, with a family history free from all trace of tubercle, is reported as becoming infected by a phthisical nurse, and having died with profuse hemoptysis, after the disease had run a rapid course.

The following cases were reported to the Clinical Society of London, by Dr. Herman Weber.

A young man who had lost his mother, two brothers and a sister, of phthisis, and who himself had twice had hæmorrhage from the lungs, had quite recovered, and married at 27, being then perfectly well. His first wife was in good health, and came of a healthy family. She died of consumption after her third confinement. The man shortly married again, an "apparently healthy woman," and this second wife, after a year of married life, died of "galloping consumption." He again married a healthy young woman of 25, belonging to an "exceptionably healthy family." During her second pregnancy, she developed symptoms of phthisis, which run a rapid course, and ended fatally in about eight months. Undaunted, this man married a fourth wife, a perfectly healthy woman of 23, of healthy antecedents. Three months after her first confinement, she began to show symptoms of phthisis, and notwithstanding two sea-voyages, died after nine months, with tubercle in liver, spleen, and intestines, as well as in the lungs. Though the husband of these four wives, who was a sailor, remained in apparently good health, physical examination revealed the existence of morbid changes about the apex of the left lung.

It is possible that the life at sea kept his disease in abeyance; for when he had to lie by on account of a severe fracture, the disease became active, and he died of consumption within two years.

A convincing report of a case in which the portagiousness of phthisis is affirmed, served as an introduction to a valuable paper last year by Dr. F. I. Knight, of Boston, and who has not read the evidence offered upon this subject by Webb.

I need not further collate records, for you gentlemen, being conversant with medical literature, will grant that new and strong proof of the proposition which we have announced is being constantly given.

3. *What have been our own observations?*—In more than three hundred cases of phthisis, I have kept a record of the family history, and find that 51 per cent. of this number were of families in which some other case had occurred. The inquiry extended no farther than to first cousins. Heretofore this would be accepted as evidence in the favor of heredity of phthisis, but I now believe that in many of these cases the disease was acquired by the carrying of the products of disease to a subject whose physical condition favored its reception and development.

I recall the case of Mrs. L., in whose family was no trace of phthisis. Before her marriage, and for several years after, she was the ideal of a healthy woman. Two children were born. Her husband, a well-known city official, had phthisis. Her attendance upon him was constant, and for some months before his death she and the younger child were with him night and day. When called to attend him I found that he had been substituting for the ordinary cuspidore, a newspaper spread upon the floor at his bedside, and this would be loaded with sputa each morning. The case was rapid. The husband died, and within eighteen months Mrs. L. and the younger child also died from phthisis, while the elder daughter, who was comparatively little in the sick room, still lives and is well and strong. I have the notes of other instances almost as instructive, but this will suffice.

From such facts as I have endeavored to give in this paper, I believe it is fair to concede the probability of the portagiousness of phthisis.

3. *How then can the disease be conveyed?*—In two ways mainly: *First*, By air carrying particles of

disease into the respiratory tract. *Second*, By food from infected sources, through the alimentary tract. The first of these propositions is, I think, proven. Not only are the experiments and records here given, powerful affirmations, but there is in the profession a steadily increasing belief in its truth which would require much more negative testimony than has yet been offered.

I would not be misunderstood. I do not think that as yet we can sustain the statement that phthisis is contagious—acquired by mere contact; or infections, if the term be limited to imply a hidden subtile miasm communicating the disease—but I do hold that particles of matter from the site of disease in a phthisical patient may be carried, planted in suitable soil and incite phthisis. I cannot think that all are liable to so acquire the disease.

I would go further, and say that probably only those may so contract phthisis, who by reason of lowered vitality, through previous sickness or long watching in the sick room, or those who have local congestion or inflammation in the respiratory tract. The fixation of a minute particle of dried sputum from a phthisical cavity, upon a point of irritation in the respiratory tract of a non-phthisical patient, may constitute an effective inoculation. This leads me to express my belief in the possibility of auto-inoculation—in so far as the débris from a tuberculous lung coming in contact with the larynx denuded of epithelium may cause laryngeal tuberculosis.

The second proposition that phthisis may be caused by eating the flesh of tuberculous animals, or drinking the milk of tuberculous cows may also be received with the same limitations as the first *i.e.*, that there are conditions which favor the development already existing in the individual; and as Mr. Law, of Cornell University has well said, this embraces such a large class that the interests involved are almost illimitable.

I will not detain you by detailed suggestions as to our duty if the position maintained in this paper be true. There should be frequent change of the atmosphere in the sick room, complete disinfection of all clothing or vessels holding expectorated material, and the close confinement of any relative of, or attendant upon a phthisical patient, should be forbidden.

I also believe the day is at hand when the physician will recognize that it is as much his duty to examine the food that his patient eats, or the milk that is ordered for the sick child, as it is his province to see that the drugs he prescribes are pure and well compounded.

2830 Locust St.

EDUCATION AND REGISTRATION OF PLUMBERS.—There is a concerted movement on foot in England and Scotland for the better education and the registration of plumbers. In connection with the national movement large meetings have been held in Edinburgh and Dundee, and representative men have been appointed to form local councils. In Edinburgh Sir Douglas Maclogan is identified with the movement.

MONOCULAR DIPLOPIA WITHOUT MANIFEST LESIONS OF THE AFFECTED EYE.

Read before the Chicago Medical Society, February 6, 1888.

BY ROBERT TILLEY, M.D.,
OF CHICAGO, ILL.

In October, 1881, Mr. James E. Adams, of London, England, brought before the Ophthalmological Society of Great Britain and Ireland the subject of uniocular diplopia. The question was confined to the existence of the phenomenon in the absence of any abnormal condition of the iris, lens, vitreous, fundus or any marked error of refraction of the affected eye, the question resolving itself into this, is it possible for an eye, not the subject of any manifest deformity to project two images of one object? or are two mental conceptions possible from one impression on the retina?

Mr. Adam's attention was directed to the subject in connection with a suit for damages against a railroad company by a "hysterical woman." This occurred in the spring of the same year, 1881. The symptoms said to have existed in the case were, insensibility, coming on half an hour after an alleged railroad injury, lasting for three or four days, followed by vomiting, then convulsions, then convergent strabismus lasting for some weeks. At the time of the examination by Mr. Adams

> both eyes were normal in all respects, the excursions of each separately were perfect and all the associated movements good. She declared that with the right eye she saw two distinct images of a pencil held at twenty inches, separated by an interval of some inches and on the same plane.

He further adds that he has since seen a little boy with a high degree of myopia who claimed to be the subject of the same phenomenon. It is definitely stated, however, that this phenomenon was observed in the right eye only when the left is closed. No statement is made, however, as to whether the closure of the non-affected eye in the woman's case was necessary to develop the phenomenon. The boy is said to have perceived images of double the number of small objects, such as coins that were placed before him, only, however, when the left eye was closed. Mr. Adams, erroneously I think, supposed that with a prism placed base upwards or downwards before the non-affected eye the boy should have, if he were not simulating, seen three objects instead of two. He sums up his remarks by saying that,

> Up to the present time (1881) he had never met with a case in which uniocular diplopia, in an eye that was physically perfect, was alleged to exist except under circumstances where there was strong ground for doubting the validity of the patient's statements.

It would have been pertinent to have asked if Mr. Adams had ever before seen a case in which uniocular diplopia was claimed without lesion of the affected eye. He further states that after the receipt of the claimed damages she speedily recovered, but the statement is too indefinite to be of any scientific value. He does not say that he saw and examined the woman, nor does he refer to any one else who did.

At the same meeting of the Society, Dr. O. M.

Ord narrated in full two cases of uniocular diplopia. The one case, a man of 28, may be subject to a certain amount of doubt, and apart from other cases would be of but small value. But in consequence of the agreement of this case in certain particulars with other cases in which there can scarcely exist a justifiable scepticism it is not without value for comparison.

In neither of the cases referred to by Mr. Adams is any mention made of external paralysis, in fact, we are assured in the one case that it did not exist, although according to the woman's claims it had existed and her statements coincide with the observations of others in later cases, and in the other we are justified in assuming that it did not exist at the time of observation.

In the first case mentioned by Dr. Ord we have the existence of paralysis or paresis of the external recti distinctly stated. There is in this case no mention made of the condition of the iris, although in all probability the pupil was dilated. We are led to infer, although it is not stated in so many words, that when both eyes were used he was the subject of ordinary diplopia arising from the feeble or paralyzed condition of the external recti, but no direct statement is made that he saw quadruple images. This is an important peculiarity. You will remember that the closure of the non-affected eye in the case of the boy referred to by Mr. Adams was necessary to the development of the phenomenon.

The second case reported by Dr. Ord was a school boy admitted to St. Thomas' Hospital September 3, 1879, 13 years of age. And strange to say, the preliminary symptoms are in some respects very similar to the first case referred to by Mr. Adams. The boy it is true had an epileptic fit. He was quite unconscious. No general paralysis followed, but he remained drowsy, and for four days had constant vomiting, and both external recti acted imperfectly. There is no note made that the boy ever saw four images when both eyes were open, and there is no statement that he did not. The movements of the eyes caused pain and the pupils were widely dilated. Mr. Nettleship, of St. Thomas' Hospital, also examined this boy and says:

> I began by simply disbelieving the boy's statement, but repeated and varied trials by others as well as myself, left little doubts that at any rate the boy was sincere in his statements.

It will thus be recognized that the phenomenon, if it exists, is an unusually rare one and that it devolves upon any one who presents a case to detail the most minute particulars.

This boy was again, later, admitted to the hospital, and was under Mr. MacCormac's care for an abscess on the back of the neck. Nothing was then known of his previous history. He died quite suddenly Nov. 20, 1880. The post-mortem examination revealed in the right cerebral hemisphere, in the normal position of the right lateral ventricle, an old blood-clot, having a slight attachment at its lower surface. It was egg-shaped, about 2½ inches long and 1 inch thick. A small aneurism the size of a pea was found ¼ of an inch below the blood-clot. The blood-vessel connected with the blood-clot, but the lumen was closed with a continuation of the blood-clot. This blood-clot was practically a tumor, was distinct and separate from the right lateral ventricle, but it had displaced the ventricle considerably to the left; there was a half inch of tissue separating the space of the blood-clot from the ventricle.

At the same meeting Dr. John Abercrombie reported a case that was under treatment at the Hospital for Sick Children, Great Ormond Street, in the month of July, 1881. The previous history of two months gives a record of headache, vomiting, peculiarity of speech, loss of power on the right side for two months, squint for three months, had chorea, no rheumatism, no convulsions. Mother died of cancer, father said to have fits. One more child of the family "healthy."

The interesting feature for the present study is the existence when admitted to the hospital of paralysis of the right external rectus, slight internal strabismus of the right eye, no ptosis.

> Sees double with both eyes and also when right eye alone is used. The false image is always above and to the left of the true one.

No mention made of the condition of the pupils. Optic discs obscure, right paler than left, veins in both eyes turgid and tortuous. Dr. Abercrombie says:

> During the next few days she was repeatedly examined with regard to diplopia, but the result was always the same, viz.: when the left eye was closed her sight was normal.
>
> July 28, unconsciousness developed, slight convulsions, pulse very frequent, breathing irregular, eyes fixed, staring pupils, moderately dilated—death.

The autopsy is so significant and the publication in which it appears so little circulated that I give it verbatim.

> Autopsy 16½ hours after death. Body weighed 44½ pounds. Rigor mortis marked. Calvaria and dura mater natural. Convolutions flattened, especially in the right posterior region. Surface of brain dry and sticky; the two hemispheres adhere to each other; corpus callosum arched. Pia-mater at base rendered opaque by recent exudation of greenish lymph, a thin layer of which envelops pons Varolii, and causes gluing together of medulla oblongata and cerebellum. The exudation of lymph extends into each Sylvian fissure.
>
> On cutting into the right hemisphere the white matter in the region of the temporo-sphenoidal and occipital lobes is found to be broken down and a large abscess cavity takes its place containing some ounces of laudable pus; the descending cornu of the lateral ventricle is filled with pus and leads directly into this abscess cavity; the lateral ventricles otherwise are dilated and filled with a thin slightly turbid fluid.
>
> Left hemisphere, cerebellum, pons Varolii and medulla oblongata, natural; left optic disc swollen, margins ill-defined. Both lungs show slight hypostatic congestion. A little thickening of mitral valve. Alimentary canal, liver, spleen and kidneys normal. Some of the mesenteric glands a little enlarged and caseous.

Dr. Abercrombie adds that there is not the least reason to suspect this child of malingering. She was examined on different occasions without anything occurring to lead us to doubt her veracity. I think, therefore, we may accept it as a fact that she had double vision with the right eye.

In May, 1884, Mr. Marcus Gunn and Dr. J. Anderson again brought the subject before the Ophthalmological Society of Great Britain, with the presentation of another case, and on the same occasion Dr.

Brailey and Messrs. Juler and Nettleship referred in brief to the cases under their care.

The case reported by Mr. Marcus Gunn and Dr. Anderson was a painter, æt. 34 years. There was paresis of the left external rectus, there was the usual homonymous diplopia of abducens paralysis, but also double images with the left eye when the right eye was shut. Tension in both eyes normal, pupils unequal, left larger, both acted to light and accommodation. On looking upward the right globe made a slight excursion inward on its way, and when he looked to the left his right eye was directed very slightly upward as well as to the left. In other respects the movements of the eye were normal. There was no nystagmus. In other respects the left eye was normal—nothing visibly wrong in the cornea, aqueous, iris, lens, vitreous, or fundus. Examination revealed the diplopia to exist over the left half of the field of vision and also over the upper part of the right half; the images got farther apart as the object neared the periphery. It was not possible to obtain the perception of three images by the aid of prisms. This patient was also examined by Dr. Nettleship. There was no reason to suspect the patient of simulation.

A detailed history of this case is given in the report. It involves so many nervous lesions that, although syphilis was denied on the part of the patient, and no demonstration of lesion could be made, he was subjected to anti-syphilitic treatment, and so far improved that the diplopia and the paralysis of the external rectus disappeared. He was still occasionally subject to attacks of unconsciousness, which were called "fits."

The cases of Mr. Nettleship, Mr. Juler and Dr. Brailley were all associated with paresis of the external rectus and dilatation of the pupil.

I will now give the details of a case at present under my observation which gave rise to my presentation of the subject.

Mary R., 9 years, orphan, no family history obtainable. When she was brought to me her face presented an appearance of great distress, a suppliant xepression; her step was cautious, as though afraid of jarring her head. The left eye was kept partially closed, not from ptosis, but from the action of the orbicularis muscle. She complained of severe pain in the infra-orbital region, greatly aggravated on pressure over the infra-orbital foramen. There was increased pain on even medium movements of the eye, so much so that she would move the head rather than the eye. The pain, apart from the infra-orbital region, was located rather in the region of the external rectus, and the position of the pulley of the superior oblique. There was no paralysis of any of the muscles demonstrable, and even paresis was very questionable. When the eyes were directed upward the left eye turned inward and the effort was associated with great distress. The difficulty of the movement was rather indicative of a pain in the muscles, developed by an effort at contraction. There was a headache which she said came on every other day. There had been and there was no other evidence of any malarial affection.

There was a very slight amount of conjunctivitis of the left eye only, no blepharitis, no other external lesion; cornea, aqueous, iris, lens, and capsule, vitreous and fundus were all normal, and there was no detachment of the retina. There had been no complaint made about the right eye, nor did it present any lesion.

V. with both eyes together and each eye separately, $\frac{6}{18}$; N. V. S. 0.6. Pupils normal in every respect; contracts quickly under the influence of light, and normally on accommodation.

She persistently claims double vision with the left eye. On examining her the first time, suspecting some difficulty in the form of paresis of the muscles of the left eye, I asked her if she ever saw two objects instead of one. "With this eye I do," she said, pointing to the left. Quite skeptical, I proceeded to examine her statements.

When a probe was held vertically before her at a distance of 50 cm. she said she saw two, the extra image being projected toward the median line, and a little less clear. She pointed to its location definitely. When, however, the probe is held in a horizontal position, she located the extra image as above the object. The double images do not change their relative distances when moved toward the nasal or temporal sides, nor when the object is moved up or down, only the observation is less satisfactory on account of the discomfort associated with the efforts at movement.

However the experiment was varied, she invariably gave evidence of double vision with one eye. When one, two, or three coins were placed before her, she saw two, four, or six.

It occurred to me to measure the relative distance of the extra image when looking at a near object and one that was more remote. Of course such a calculation would be a good check on the accuracy of her answer. The principle involved being the distance of the extra image from the object at one metre should vary directly as the distance of the extra image at six metres. One measurement which I made before using atropine gave me a displacement of the extra image to the nasal half of visual field of 075 millimetres at a distance of one metre; and at six metres the displacement, according to her location, 400 millimetres. The theoretical distance on calculation would give 450. This I considered a corroboration of the girl's veracity, as the discrepancy could well be referred to inaccuracy of my crude measurements. It would have been impossible for a child of 9 years to have calculated so near in the absence of some actual sensation similar to what she claimed.

Atropine was applied to the eye, and observations were made two days later when the eye was fully atrophized, the pupils dilated *ad maximum*, and the accommodation completely inactive. The same answers were given to the same questions, only now she located the extra image not only in the nasal and upper half of the field of vision, but as quite a good deal nearer to her than the object. This phenomenon was not noted before the influence of the atropia. It was not definitely noted that it did not exist, but I think I should have noted the fact when measuring the distances of the extra images from the object, if she had thus seen it.

The vision of the left eye, under the influence of atropia, required a lens S+1 D to restore the visual acuity that she had before, showing a slight amount of latent hypermetropia. With the S+1.00 D, however, vision was $\frac{6}{8}$ as before. No satisfactory explanation was obtained relative to the deficiency of visual acuity, whether it might be referred to retinal asthenopia or cortical asthenia.

The exact displacement of the extra image at one metre during the influence of the atropia was difficult because of the above-mentioned fact that the extra image was nearer to the eye than the object, but approximate measurements gave the distance at one metre to be .65 millimetres and at six metres the distance of the extra image was claimed to be 330 millimetres. Theoretical calculation would have given 390 mm. It will be remembered that under atropia the extra image seemed less distant than the actual object when near objects were under observation, but the phenomenon did not exist when looking at an object at a distance of six metres. It did not occur to me to inquire at what distance this phenomenon ceased to be observable.

Pursuing investigations further I found the girl to be completely red blind. She had no conception of any difference between greens and greys; purple, blue and violet she put together as similar colors.

The observations were made at intervals between November 12, 1887, and December 4, 1887. On December 4, when in church, she felt that she conld neither speak nor breathe, and then she was unconscious. Convulsions followed which were said by the Sisters to have lasted four hours. After a period of consciousness the convulsions were renewed the same night and said to have continued for a similar period. After this she felt pain all over the body. Confined to the bed. December 8, at a consultation with Dr. D. W. Brower, Professor of Nervous and Mental Diseases, at the Woman's College, the double vision with one eye was demonstrated. December 13, has been frequently delirious since last record; cannot keep anything on the stomach. When delirious complains of pain on the top of the head. Buries her head as much as possible in the pillows. Pulse has varied from 60 to 75 and the temperature has scarcely varied from the normal. December 15, has been very restless—slapped and tore the hair of her little attendant. All at once she became better. She slept well, complained of no pain, and ate her food, and the vomiting ceased. For the first time since she has been under my observation she can now look up without experiencing pain. There is no mydriasis, no lack of accommodation, and no paralysis or paresis of the external ocular muscles.

She still sees double with the two eyes open and with the left eye alone, the false image referred to the same position whether the right eye is open or closed. It is always in the nasal and upper half of the visual field. I could not get her to acknowledge any inclination of the images.

December 23, she left the institution in charge of the Sisters, and the Sister in charge reported she seemed well as ever but less active and less capable mentally.

January 19, 1888. As she did not return to school, I visited her at home. I found her afflicted with abscesses all over her body, some under the arms and on the forearm. The left eye was giving her no pain, but the double images were present, and a pain which she said was similar to the pain which she experienced in the left was appearing in the right eye.

I do not expect to see her again, I close the report here. The etiology, pathology and location of the cerebral lesion are all involved in so much obscurity that I shall add only a few words.

The similarity of the main features of the case to the two cases above referred to made me suspect from the first time I saw the child the existence of either brain tumor, or abscess. The location of the tumor or abscess, simply from the two autopsies referred to above, I referred to the right cerebral hemisphere, in such a position as to encroach on the lateral ventricle. I have no theory whatever to present relative to the possibility of double images under the circumstances. The development of convulsions and their persistence at intervals with the associated vomiting strengthened that opinion. The increased severity of the symptoms on the 14th, and the sudden improvement, made me suspect an abscess and its rupture into the third ventricle. The development of abscesses over the body in about two weeks after the sudden improvement, made me suspect that these abscesses were of a metastatic character. As to the character of the primary abscess, I have not sufficient data to justify any conclusion, and the want of education on the part of the person in charge of her precludes investigation.

APEX EXPANSION VERSUS PURE AIR IN PULMONARY CONSUMPTION.

Read before the Philadelphia County Medical Society February 22, 1888.

BY THOMAS J. MAYS, M.D.,
OF PHILADELPHIA.

Next to the tubercle bacillus, impure air stands most prominent among the many agencies which have been assigned as the causes of pulmonary consumption. Innumerable plans and methods have been devised and proposed for improving the ventilation of our dwellings, hospitals and workshops; volumes upon volumes have been written on the ill effects of breathing vitiated air; and the immaculate freshness of the country and mountain air has come to be universally regarded as a certain guarantee against pulmonary consumption. These, like many other popular notions, contain a germ of truth, but actually are delusive, inasmuch as they exaggerate the effects of a small evil, and afford a false sense of security against the real source of danger in the production of this disease. This we shall endeavor to show in the following pages.

At the very outset we desire it to be well understood that we do not in the least underrate the value of fresh, wholesome air in the prevention and treatment of pulmonary consumption, and while it is

probably true that on the whole country people enjoy greater immunity from this disease than city people—though this is not proven, on account of a lack of adequate statistics—yet we are convinced that the purity of the atmosphere plays a very small part in bringing about this probable result. If we are permitted to make a homely, hypothetical proposition, we will state that if two individuals who respire the same quantity of air, and who are equally well off so far as heredity, food, clothing, warmth, comfort, etc., are concerned, were both enjoined to maintain a sedentary and a stooped position of their bodies for an unlimited period, one inside of a house and the other outside in the open air, we have no reason for believing that the one inside will fall a victim to this disease sooner than the one on the outside.

If it were true that this disease is the result of breathing a vitiated and impure atmosphere, how can we account for the fact that the inhabitants of Iceland, Greenland, Lapland, and of other cold countries of the north, who live in dwellings which are notoriously wanting in ventilation, are practically exempt from this disease? Of the Icelanders, Mr. Warnford Lock,[1] who is very familiar with these people, says that their life is

"one long exposure to the elements, and during the night they live in dwellings devoid of ventilation, and which, if not buried beneath the earth, are built of turf and often become grass-grown. A very bad feature being the excessive stuffiness of the common living and sleeping room, when, owing to the absence of fires, the greatest possible crowding and plugging are necessary in order to maintain a tolerable degree of warmth."

And yet Dr. Cullimore,[2] from whose work the above quotation is taken, says (p. 73)

"that consumption in Iceland is never indigenous, but is always, when it does occur, imported from abroad and but seldom extends to the second native generation."

On the other hand, it may be stated that the people of the tropical regions of the globe who enjoy an uninterrupted reveling in pure, fresh air, both day and night, winter and summer, are by no means free from pulmonary consumption. The only difference, so far as the physical life of these two classes of people is concerned, is that the warm climate, which produces such a luxurious atmosphere, also creates a tendency to physiological sluggishness and an indisposition toward physical exertion among its inhabitants; while the people of the cold and rigorous north are compelled to maintain the warmth and vitality of their bodies in great part, by day, through physical exercise, of which their occupations of hunting, fishing, herding, etc., give them a full share. It is also well known that miners and laborers employed in coal mines, who continually respire an atmosphere loaded with impurities, and damp and musty, suffer but very little from this disease.

One fact which lends color to the belief that pure air is such an essential element in limiting the ravages of consumption, is that those who occupy elevated or mountainous regions are less liable to this disease than those who live near the sea level. Thus Fuchs shows from extensive data that

"at Marseilles, on the seaboard, the mortality from this disease is 25 per cent.; at Oldenburgh, eighty feet above the level of the sea, it is 30 per cent.; at Hamburg, forty-eight feet above the sea, it is 23 per cent.; while at Eschevege, four hundred and ninety-six feet above the sea level, it is only 12 per cent.; and at Brotterode, eighteen hundred feet above the sea, it is but 0.9 per cent."

Carrying this line of observation further, it appears very probable that consumption is almost unknown among any native people who live more than 6000 feet above the level of the sea.

Now that which concerns us here chiefly is the reason why mountain climates are, as a rule, so free from pulmonary consumption. Is it because the atmosphere is pure and free from septic germs? This is hardly possible, for if it were true that the aseptic condition of the air played any very prominent part, why should the Icelanders, who nightly reek in a most filthy atmosphere; or the dwellers along the Nile, who, according to Mr. B. Phillips, live "in huts where the pure air has neither ingress nor egress, except through a small hole near the ground;" or the coal miners, who continually respire a foul and poisonous atmosphere, all be comparatively free from this disease? Is it due to the general absence of humidity? We think not; for Bogota, the capital of the United States of Colombia, located on the Andes, near the equator, and at an elevation of over 9000 feet, is said to be entirely exempt from this disease, although dampness prevails to quite a large extent. We think there is much reason for believing that it is principally, if not entirely, on account of the attenuated condition of the atmosphere, and shall, therefore, at once proceed to consider the physiological influence of high altitudes on the human body.

It is estimated by Dr. Denison that at an elevation of 6000 feet the surface of the body is relieved of nearly 7000 pounds pressure. When such an enormous weight is lifted from the body it is quite evident that its interior must also be markedly affected—the pulse is accelerated from fifteen to twenty beats per minute; the respiration is quickened from ten to fifteen breaths per minute; evaporation from the skin and lungs is increased, and the amount of urine is diminished. These are some of the immediate effects. Protracted residence in such a high region enlarges the chest capacity. The Quichua Indians, who dwell on the elevated table lands of Peru, have enormous-sized chests, containing capacious lungs with large air cells. The Mexican Indians possess chests which are out of proportion to the sizes of the individuals. Dr. Denison says that children born in the Rocky Mountains have chests of unusually large capacity, and M. Jaccoud states that at St. Moritz the respirations are not only more frequent, but fuller.

The reason why the number of respirations increase while ascending a high elevation becomes clear when we take into consideration the fact that at the sea level a cubic foot of dry air contains about 130 grains of oxygen, while at an elevation of 6000 feet it contains only about 106 grains—nearly 25 per cent. less than the body is accustomed to breathe at or near the seaboard—therefore, in order to supply the wonted amount of oxygen to the body, the

[1] The Home of the Eddas. S. Low, 1879.
[2] Consumption as a Contagious Disease. Ballière, Tindal & Cox, 1880.

respirations must either increase in number or in extent. From all accounts it is very probable that respiration becomes accelerated only during the early period of exposure to such an attenuated atmosphere, and that subsequently this function becomes slow again because the air penetrates more deeply and completely into lung tissue but little utilized before.

That man does not suffer under such a deprivation of oxygen is evident from what we know to be true of his lung capacity under ordinary conditions of life. Prof. Mosso has recently proven experimentally that man possesses a lung capacity which is nearly one-fourth larger than the actual necessities of life at the sea level demand; hence by employing his whole lung capacity he can extract a sufficient amount of oxygen from this attenuated atmosphere without difficulty. And herein lies the secret why so many consumptives and others with weak lungs, derive such a great benefit when they resort to a mountain climate. It may be trite, but it is nevertheless true, that all consumption practically begins at the lung apices, because these parts are habitually inactive. They are inactive because, in the first place, the bronchial tubes are so arranged that they conduct the air with greater facility to the base than to the apex of a lung, and, in the second place, because the lung is larger than necessary; hence the base, which is filled most readily, is filled first, and the apex, if at all, toward the end of inspiration. The apices, therefore, become the superfluous parts of the respiratory organs. It is quite different, however, when the body is immersed in a highly attenuated atmosphere. Every available space in the chest is now brought into requisition to furnish the needed amount of oxygen, the apices are called out of their lethargic state, and the alveoli are inflated, and if the infiltrated areas are not dispersed the surrounding alveoli are kept permeable, and so the disease is, at least, limited and called into abeyance.

This statement is corroborated by those who have had large experience in the climatic treatment of pulmonary consumption. Thus Ruedi[3] reports "that of 600 consumptives under his care at Davos, expansion of the thorax took place in no less than 584." Dr. Denison[4] says "the increased circumference of the chests of consumptives after undergoing the high-altitude treatment is shown in many of Prof. Weber's, as well as in my own, cases." Dr. Lindsay, in the work already quoted, states (p. 32) that

"Davos does not cure consumption by its sunshine, or the purity and dryness of its air (although these conditions undoubtedly coöperate in the beneficial effect), but mainly by the rarefaction of its air, which stimulates respiratory activity, promotes healthy expansion and soundness of tissue in the lungs, and hence aids them to resist the spread of morbid deposits."

So much, then, for the immunity which is afforded by mountain climates; but that which is of still greater interest to us is the fact that those who follow active employment are less liable to this disease than those who pursue sedentary and quiet occupations. Thus, M. Lombard found

"in Paris, Geneva, Vienna and Hamburg, that there are a greater number of persons leading a sedentary life afflicted with phthisis than of those leading an active life, in the proportion of 141 to 89. In the Brompton Hospital the relative liability was found to be 63 per cent. of indoor males to 30 per cent. of outdoor, and all the consumptive females followed indoor occupations. Dr. Guy found, in the close workshops of a printing establishment, the compositors, whose employment is sedentary, fell victims to phthisis in the proportion of 44 per cent. to 31½ per cent. of the pressmen, who, although breathing the same air and in every other respect subject to the same habits of life, differ only in the active bodily exercise which the press imposes on them; and among the same class of operatives the deaths from the same cause did not exceed 25 per cent. in those who use exercise in the open air." (Ancell.)

There can be no doubt, too, that those of our Indians who are still allowed to obey their roaming instincts of hunting and of fishing, or to follow their vocation of farming, which a number have, owe their immunity from this disease, which we know they possess, in great part if not entirely to the physical exercise which they obtain in this manner; while those who are subjected to the idle and improvident reservation life die rapidly from it, principally because they are deprived of their wonted exercise. This is of special interest to us here, because it has such a direct bearing on the main point at issue. Some of the former class of Indians, like the Pimas, for example, who may be called wild, although they are agricultural in their habits, are living in half underground huts with very little or no ventilation; yet, from all accounts, consumption is an exceedingly rare disease among them.

Thus far we have seen that, on the whole, those who occupy elevated habitations, as well as those who follow active exercise, are more exempt from the disease under consideration than those who live near the sea level or those who live a life of quietude. In connection with this we will consider the influence of physical exercise on the lungs, and endeavor to ascertain how it affords protection against consumption. During physical exercise more oxygen is consumed by the muscles, and more blood and air circulate through the lungs than during rest. Just how much more air enters the lungs during activity than during rest can easily be estimated when it is known that during inactivity a man breathes 480 cubic inches of air per minute, and while walking at the rate of four miles per hour, or while tramping a treadmill, he breathes 2400 cubic inches, and if he walks at the rate of six miles an hour he takes in 3260 cubic inches of air per minute. The difference between 480 and 2400 cubic inches of air-capacity shows that during the exercise of walking even at the rate of four miles per hour, five times more lung surface is thrown into action than during rest; which proves very conclusively that bodily activity possesses a marked influence in determining the degree of lung expansion, and that under such conditions regions of lung will be called into service which are never fully reached by air during bodily rest.

This is in entire accord with what practically exists. Thus Darwin[5] says that the lungs in improved breeds of cattle, which naturally take little exercise and are domiciled much of the time, "are found to be considerably reduced in size when compared with those possessed by animals having perfect liberty," and

[3] Climatic Treatment of Consumption. By Dr. J. A. Lindsay, p. 62.
[4] Rocky Mountain Health Resorts, p. 85.

Waldenburg[6] states that the vital lung capacity is smallest in persons who lead sedentary lives, such as professional men, students, clerks, etc., and is greatest in those who follow active outdoor occupations, such as sailors, recruits, etc. Chassagne and Dally, in their joint work on the "Influence of Gymnastics on the Development of Man," report that at the Military School of Gymnastics of Joinville-le-Pont, out of 401 individuals subjected to gymnastic exercises for five months, 307, or 76 per cent., showed an increase of an average of 2.5 centimetres in the mammary circumference of the thorax. According to Dr. Abel, 75 per cent. of those who practice gymnastics in Germany experience an increase in the measurements of the chest. There can be no doubt that the principal reason why consumption increases with the advent of civilization is that everything in civilized life tends to produce physical inertia in our bodies. Walking is substituted by riding in carriages and in cars; manual labor is in great part replaced by machinery; active outdoor labor is supplemented by quiet indoor occupations—in fact, everything which tends to produce physical activity is exchanged for a life of ease and indolence. The American Indian, as has already been stated, is known to be comparatively free from the disease in his wild state, but as soon as he acquires the habits and customs of civilized life he becomes its victim.

In converging the two lines of reasoning which have been thus far developed in this paper, it appears that the immunity from consumption which is established by residing in a mountain climate, and by practicing physical exercise, is chiefly brought about in the same manner, viz.: by increasing the capacity of the chest. And from a practical point of view it is of some moment to know whether the former has more weight in bringing about such restoration than the latter—or, in other words, whether those who live in high altitudes continue to enjoy this exemption if they refrain from active physical exercise and take up a sedentary occupation in such regions. From recent inquiry into this subject we are inclined to believe, at least so far as the Rocky Mountain climate is concerned, that as soon as outdoor pursuits are exchanged for sedentary indoor occupations, consumption increases in frequency. It is, therefore, quite certain that physiological exercise plays a more important part in the problem of prevention and cure of consumption than a residence in an elevated or mountain climate, however valuable the latter may be. We have, moreover, good reason for believing that the immunity which is established through physical exercise is more permanent in character than that which is secured through residing in a mountain climate, for it is a common observation that consumptives flourish only in high altitudes so long as they remain; a protracted stay at the sea level is always regarded as perilous. Such consequences are in perfect harmony with what one would be led to apprehend from a knowledge of the physiological factors involved in the restoration of the patient. These factors are entirely local, and their influence does not extend very far beyond their immediate dominion. This objection does not hold good in regard to physical exercise. One thing may be said, however, in favor of mountain climates which is not true of physical exercise, viz.: it produces its beneficial results without conscious effort on the part of the individual; therefore, when the remedy is viewed from a standpoint of ease and comfort, and not from one of permanence, the mountain climate is to be preferred.

In discussing the influence of mountain climate it must not be overlooked that, on account of its rarefaction, it increases the circulatory and cellular activity of the body, and in this way undoubtedly aids the process of nutrition; yet even this influence cannot be denied to physical exercise, although it is brought about in a more direct and positive manner.

While increased chest capacity is, therefore, the great desideratum in preventing and treating consumption, we have the strongest evidence for believing that it is not so much a question of developing the base of the lungs as it is one of expanding the apices. This is well shown by the fact that the civilized female, although she has on the whole much less chest capacity than the male, yet, owing to her increased costal expansion, which has been cultivated through the protracted influence of tight lacing, she is less liable to pulmonary consumption than the male.[7]

Pulmonary Gymnastics.—Such, then, are the comparative effects of mountain climate and of physical exercise in the treatment of pulmonary consumption, and it now remains to be shown how the effects of the latter can be obtained without resorting to those of the former. Reference has already been made to the fact that muscular effort increases respiratory motion, and in taking up the question of pulmonary gymnastics, it is not our purpose to discuss those exercises only which have a direct influence on the chest capacity, but also those which, through the body, have an indirect influence on the pulmonary organs. In all exercises it is very important that none should be carried to the extent of decided fatigue; and that, whenever possible, the body and head should be kept erect, the shoulders thrown back and the lungs thoroughly filled with each breath; that breathing should only take place through the nose; and that sufficient food is taken during the intervals.

Bodily Exercise.—The power of walking is common to most people, and its influence on the lungs, as we have seen, is very marked. It is regarded of great service even by those who exclusively advocate the utility of high altitude treatment. Dr. Brehmer, of Görbersdorf, according to Schreiber, was the first to prescribe, for consumptives, walking up a gradual ascent. A semi-daily walk of half an hour or an hour, either on the level or on a slight upward grade, is of immense advantage to the invalid. Running, dancing, skipping rope, (especially when the rope is swung backward), bowling, etc., are to be highly recommended. Whatever the mode of exercise may

[6] Animals and Plants, vol. ii, p. 361.
[6] Pneumatische Behandlung Respr. u. Circul. Krankheiten, p. 119.

[7] Female Dress as a Determining Factor in Pulmonary Consumption. Thomas J. Mays, Med. News, January 7, 1888.

be, it must be performed under as little compulsion as possible. One reason why the above named exercises are so conducive to health consists in the fact that the excitement which they induce is so attractive that the consciousness of muscular effort is lost.

Among the many indoor exercises the following movements are very valuable. The arms, being used as levers, are swung backward as far as possible on a level with the shoulders during each inspiration, and brought together in front on the same level during each expiration, or the hands are brought together above the head while inspiring, and gradually brought down alongside the body while expiring. When a deep inspiration is taken in accordance with either plan and held until the arms are gradually moved forward or downward, or even longer, the process of chest expansion is materially enhanced.

Another very effective exercise is to take a deep inspiration, and during expiration only the patient, in a loud voice, will count as long as possible. A male person with a good chest capacity can count up to sixty or seventy, while in a female with ordinary lungs this power is somewhat reduced. Practice of this sort will gradually develop the chest, and the increased ability to count is a measure of the improvement going on within the thorax.

Many of these movements may have their effects greatly enhanced by the use of dumb bells, chest weights, etc., which are made especially for the purpose.

Compressed and Rarefied Air.—The breathing of compressed and rarefied air is attracting wide attention at the present time in connection with pulmonary consumption, and is another most useful method whereby the chest capacity can be markedly improved. Nearly four years ago Dr. Cohen, the honored President of our Society, advocated the substitution of compressed and rarefied air for a change of climate, in a paper which he read before the American Climatological Association. Here he says:

"In many cases fully as much good can be secured by this treatment as by change of climate, and in a few much more; though, in the vast majority of cases in which change of climate is advisable, it is but a poor substitute."

There can be no doubt that compressed and rarefied air is inadequate when used alone in many cases, but when combined with pulmonary gymnastics and other judicious treatment, we are not sure that the results obtained are inferior to those which are derived from climatic treatment. Recent experience has shown us that when consumptives, who had spent one or two winters on the Rocky Mountains, or on the Pacific Slope, without benefit, were subjected to the use of compressed and rarefied air in association with other pulmonary exercises, such as are above described, their improvement became marked and decided. On the whole, our experience with the air treatment, combined with pulmonary gymnastics, has been very favorable, and we think that this is in consonance with the observations of others. Thus the late Professor Flint, in his work on *Phthisis*, says (p. 406):

"It does not appear, from the analysis of my cases, that changes of climate have in a marked degree a beneficial influence, as compared with the hygienic measures available at home."

We believe, however, that, as a rule, these measures are applied too infrequently to be of the greatest service; and, therefore, insist that the pulmonary gymnastics be repeated every hour and a half during the day—the first thing in the morning and the last thing at night—and for from fifteen to twenty minutes at each time; and that the air inhalations be given at first twice, and in the course of two or three weeks gradually increased to four or five times a day, and even oftener. It is very true that this method of treatment involves more labor and perseverance on the part of the patient than is required in a high mountain climate; but then it is a question whether the patient is not more than compensated by the consciousness that a separation from friends is unnecessary, that the heavy expense, the dangers and discomforts incidental to travel are avoided, and, above all, that the improvement which may take place will be persistent and be practically unaffected by a change of residence.

Now, after reviewing the whole subject, we are driven to the conclusion that the line of immunity from consumption, which, in the early history of our country, was located at the Atlantic seaboard, and which has gradually receded westward with the tide of civilization, until at present it has reached the latitude of Colorado, will not stop in its course until it touches the shores of the Pacific; that the question of curing the disease does not depend on the purity or freshness of the air, or upon the number of bacilli which the atmosphere may contain, or upon the amount of oxygen which may be introduced into the body—for these are all secondary considerations; but it is simply a mechanical question—a question as to the best mode of expanding the lungs, and especially the apices of our round-shouldered and flat-chested patients, of removing the infiltrated products already existing, and of enhancing the constitutional resistance.

MEDICAL PROGRESS.

ANATOMY AND PHYSIOLOGY OF THE PHRENIC NERVE.—MR. W. W. WAGSTAFFE has the following note in *St. Thomas's Hosp. Reports*, vol. xvi., 1886:

During the course of teaching and examining I have been struck with the absence from most, if not all, of our text-books, of any notice or explanation of an important fact which appears obvious anatomically—the peculiar relation of the phrenic nerve to the anterior scalenus muscle. Our most generally used anatomical works ignore the fact that in passing over this muscle the phrenic nerve sometimes gives branches to it. This I have traced in several cases, but it is no doubt more usual for the branch of supply to the muscle to come from the fourth cervical nerve close to the origin of the main root of the phrenic. But whichever arrangement exists, the association of either the trunk or the root of the phren-

ic with the nerve-supply to the anterior scalenus is the fact I wish to emphasize, and the course of the nerve over the muscle must also in itself be looked upon as a matter of interest and importance. Those few anatomical authorities who mention the fact of branches to the anterior scalenus sometimes coming from the phrenic, either entirely omit a reference to its obvious physiological use as a motor nerve to this muscle, or lose sight of what appears an important physiological connection between the diaphragm and the anterior scalenus in respiration.

Even in standard physiological works I do not find a satisfactory reference to this fact. Professor Michael Foster alone among English authorities gives any prominence to the special value of the scaleni in the mechanism of respiration, but even in his admirable work the meaning of the relation of the phrenic to the two extremities of the thorax is not satisfactorily enunciated. And in speaking of the effects of the division of the phrenic (in the rabbit) reference is only made to its influence on the diaphragm. I have not the means by me of determining a point which would be interesting to notice, and this is how far the relationship of the phrenic to the anterior scalenus is common to animals having thoracic respiration.

Noting, then, that the phrenic in passing over the anterior scalenus may supply it with branches, and that its final distribution is to the diaphragm, we have, it seems to me, an important anatomical fact indicating the simultaneous action of the upper and lower ends of the respiratory apparatus—a mechanism which the ordinary bellows or concertina may roughly exemplify. The scalenus would fix and raise the first rib, from which the intercostals would work, probably external and internal, thus acting as elevators of the ribs and increasing the lateral capacity of the chest, while the diaphragm of course increases the longitudinal capacity.[1]

The course taken by the phrenic is suggestive of its physiological function on the muscles above indicated, and it would be of interest and value to notice the effect of injury or disease upon the phrenic between these two endings; such cases, however, are not easy to find. Some interesting cases are to be found in Le Gros Clark's paper just referred to, but in these the whole of the phrenic has been paralyzed from injury to the cord, and we cannot distinguish the function of the phrenic as to its double supply.

Henle notices one case, but one only, of branches coming from the phrenic to the anterior scalenus, and this case is given on the authority of Luschka. I shall be satisfied if this note calls attention to the fact, and suggests a satisfactory physiological explanation.

LAPAROTOMY FOR ACUTE INTESTINAL OBSTRUCTION.—In the *Medical Record*, of February 25, 1888, DR. W. T. BULL records five cases of intestinal obstruction operated on, with two deaths. The histories show that the operations were done as early as consent could be obtained, and with a fair measure of success, but in all of them still earlier interference would have been better surgery and more advantageous to the patient. It is difficult to adhere to a rule that an operation should be done at a given time from the onset of an attack. Either the danger is not appreciated by the physician in attendance, or the friends object, or some variation in the symptoms leads to the hope that medical measures may suffice. Much valuable time is lost in efforts at refinement in diagnosis, such as the location of the seat of obstruction and the determination of its nature. I do not mean to speak lightly of the information we possess, which will sometimes enable us to arrive at valuable conclusions in these respects, but I think the deciding of the main question, Does intestinal obstruction exist? is more important. This conclusion once reached, medical measures may be resorted to. If they fail to relieve at the end of from twenty-four to forty-eight hours, the operation should be performed. In this I refer, as a matter of course, to acute obstructions. In chronic cases, like the last two narrated, it is proper to delay longer. The persistence of pain which requires morphine for its relief, the continuance of vomiting, the failure to provoke a movement by several rectal enemata, aided by mild aperients, these symptoms, with or without commencing tympanites and without fever, should invite the attention of the surgeon, and demand operative interference unless promptly relieved. The operation decided upon, an incision large enough to admit the hand should be made, and the presenting intestine pushed away to permit inspection of the rectum, cæcum, and sigmoid flexure. Then bands may be felt for, or empty loops of intestine, and this failing to discover the lesion, the gut may be searched, while still inside the belly, for congested or distended portions. This can be done rapidly, if the edges of the abdominal wound be strongly retracted. Removal of the small intestine from the cavity, or "eventration, "which has been advocated by Kümmell, seems to me a very serious step. It has, in the instances where I have done it for gunshot wound, invariably produced great shock. It might seem proper if the intestine were *not* heavy from congestion and enlarged by distention; but when such a condition exists, I think enterotomy would be preferable to "eventration," or to the emptying of the gut by incision, as proposed by Greig Smith.

DANGERS OF SIMPLE EXTRACTION OF CATARACT.—In an article on this subject DR. HASKETT DERBY, of Boston, says that he has laid down the following principles for his own guidance:

1. He would reserve simple extraction for those cases in which the cataract is ripe, the nucleus large, the patient tranquil and amenable to discipline.

2. After the operation, the application of the bandage should be slightly delayed, the object being to ascertain whether the iris, once replaced, shows any tendency to again prolapse. If it does so, it is to be at one excised.

3. Eserine is to be applied directly to the eye immediately after the operation, and dropped in the

[1] Vide Le Gros Clark on the "Mechanism of Respiration," Proc. Royal Soc., 1872, a paper too much overlooked.

inner corner of the eye, without separating the lids (as recommended by Schweigger) for the three following days.

4. Greater quiet on the part of the patient is to be insisted on than has been the case after the operation of Graefe.

5. The eye needs to be inspected much sooner, certainly by the end of the third day.

And even if these or similar rules be followed, I cannot resist the belief that for the average surgeon, and in the present state of our knowledge, simple extraction at the best involves an element of danger that is wanting in the method of Graefe. The successful extraction without iridectomy is unquestionably the more brilliant of the two methods, and the patient thus cured a more striking exemplification of surgical skill. A greater familiarity with the new operation may cause the risk to assume inconsiderable proportions. But some risk is likely to always remain. It is like the old question as to the relative advantages of ether and chloroform: the latter easier to transport, pleasanter to take, quicker in its effect, and occasionally, alarming in its consequences.—*Boston Medical and Surgical Journal*, Feb. 23, 1888.

THE ETIOLOGY OF GASTRIC ULCER.—Impressed by the fact that women employed as cooks so frequently suffer from gastric ulcer, DECKER (*Fortschritte der Med.*, B. v. 415) instituted some experiments on the action of hot foods in producing the disease. Two dogs were repeatedly fed through the stomach tube with semi-solid food heated to 120° F. The first received nourishment in this way four times, and the other eight times. At the autopsy of the first dog the mucous membrane of the stomach appeared normal in all parts, except at the lesser curvature, where there was situated a hyperæmic spot, about four-tenths of an inch in diameter, caused by a hæmorrhagic extravasation between the mucous and muscular layers.

In the second dog there was found a dark-red area on the posterior gastric wall, about the size of a quarter of a dollar. The mucous membrane over it was shrivelled, and resembled felt, and had been somewhat separated from the muscular layer by the occurrence of hæmorrhage between them. In the pyloric region were two typical gastric ulcers, extending to the serous layer. The author considers the hæmorrhagic infiltration, the shrinking and elevation of the mucous membrane, and its final destruction, to be the three phases in the formation of gastric ulcer.

In connection with Decker's experiments the observations of Ritter are of interest (*Zeitsch. f. kl. Med.*, B. xii., H. 5, 6, 592). There are a number of clinical observations which render it almost certain that gastric ulcer can be produced by violence acting through the abdominal walls. Several such cases have been studied in Leube's clinic, and an autopsy of Hofmann's offers additional evidence in the same direction. Ritter made some experiments on dogs to prove that ulcer could actually be brought about in this way. The animals received a rather heavy blow over the region of the stomach, and chloroform narcosis was then continued until death resulted. The autopsies, revealed regions of hæmorrhage beneath the mucous layer, separating it from the tissues below. There is no doubt that the gastric juice would have soon produced ulcers at these spots, had the animals been allowed to live.

The action of trauma in producing ulcer is probably connected with the quantity and quality of the gastric secretions. Then, too, a more chronically acting trauma, such as disturbance of the circulation, plays, perhaps, a more prominent rôle than has been ordinarily supposed; though it is difficult to understand why chlorosis should lead to circulatory disturbance oftener than do pulmonary or cardiac diseases.

It seems very probable that the use of the corset is also a frequent factor by pressing the stomach against the vertebral column. This, combined with the pressure of the food toward the pylorus, and the anæmic condition of the mucous membrane in chlorotic women, may be sufficient to deprive the part of blood to such a degree that the gastric juice begins to act upon it.—*American Journal of the Medical Sciences*, January, 1888.

UNEQUAL WIDTH OF THE PUPIL IN INTERNAL DISEASES.—DR. F. PASTKERNATZKY, from observations made at the clinic for diagnosis and general therapeutics of Prof. Ischndowsky (*Arch. Ophth.*, vol. xvi, No. 3), gives the following: He generally found unequal width of the pupil in those constitutional diseases in which there is a distinct anatomical lesion, generally on one side only (croupous pneumonia, pleuritis, renal colic, affections of the heart and liver). The various diseases may be ranged as follows, as regards the frequency of occurrence of this symptom: In croupous pneumonia, inequality of the pupils occurs in 85 per cent. of all cases; in heart disease and aneurism of the aorta, in 61 per cent.; in pleurisy, in 52 per cent.; in catarrhal chronic pneumonia, in 38 per cent.; in acute rheumatism of the joints, in 25 per cent.; in catarrh of the respiratory passages, in 25 per cent.; in scurvy, in 16 per cent.; in typhus fever, in 16 per cent.; in febris recurrens, in 15 per cent.; in typhoid fever, 13 per cent. In croupous pneumonia the pupil of the affected side is larger in the beginning of the process; the maximum of dilatation is reached at the height of the disease. Shortly before the crisis, and during the latter, the pupils become equally wide, while during convalescence the pupil of the affected side becomes smaller. The author believes that the inequality of the pupils in internal disease is a reflex phenomenon in close connection with the process of disease, the nature of which has not yet been determined.—*Dublin Journal of Medical Science*, January, 1888.

TREATMENT OF ARTICULAR RHEUMATISM—As the result of much experience AUFRECHT has come to use salicylic acid in acute rheumatism, to the exclusion of other drugs, and with complete success. He gives the acid in full doses, gr. 90 a day for the first two or three days, and gr. 45–60 a day for the fol-

lowing eight or ten days. This course could not be carried out in all cases however, since burning pain in the stomach, vomiting, tinnitus aurium, or dyspnœa prevented the use of the drug. Nor could salicylate of soda, in corresponding doses, be used in these cases, since it caused the same disagreeable symptoms, and was not so effective in keeping down pain and fever.

When salol was introduced Aufrecht tried it, and with improvement in some respects. It caused but little local or general disturbance, and its use could be continued as long as desired; one patient took gr. 3500 in doses of gr. 90 a day. But in acute polyarthritic cases salol was not so effective as salicylic acid; for while the latter generally subdues pain and fever in twenty-four hours, salol requires three or four days, though the pain is greatly ameliorated in a shorter time. Still, in consequence of its many advantages, Aufrecht used salol as routine treatment until he had a fatal case of acute endocarditis—which he had not met with in 600 cases treated with salicylic acid. Since that time he has adopted a mixed treatment. Acute cases receive 90 gr. of the acid in each of the first two days, and afterwards the same amount of salol; but later, while the patient is still in bed, the salol is reduced to gr. 60 a day. Since salicylic acid is generally well borne for two days, this method of using the drugs seems worthy of trial as routine practice. Of course, if the acid can be taken agreeably it may be continued.

Salol is in every way preferable in chronic articular rheumatism, since by its use the dangers of the prolonged use of the acid are avoided, and there is more hope of a permanent cure.—*Deutsche med. Wochenschrift*, Jan. 12, 1888.

ACETANILIDE (ANTIFEBRIN) IN FEBRILE DISEASES. DR. ADEMSKI (*Wratsch*, 1887, No. 25; quoted by *Bull. Gén. de Thérap.*, January 15, 1888) narrates his experience with acetanilide in various febrile diseases. Amongst them were 4 of typhoid, 3 of acute rheumatism, 2 of pleuro-pneumonia, and 1 each of intermittent pleurisy, phthisis, and erysipelas. Not all patients bore the remedy well, and in one case of acute rheumatism a dose of sixty centigrammes (ten grains) brought on symptoms of collapse. The temperature was invariably lowered. A dose of two grains every hour rapidly lowered the fever heat. The pulse is lowered from ten to thirty beats per minute, and the respirations may be brought down from twenty-six to fourteen. Sweating was a constant result. In large doses acetanilide induces hypnotic effects, and in such cases as acute rheumatism and erysipelas, manifests an anodyne action. Diuresis was a symptom in the majority of cases. The urea was lessened, but the total output of nitrates was increased; the phosphates, the chlorides, and the sulphates were diminished in quantity. The diuresis for the most part consisted, therefore, in a mere increase of the urinary water.—*Am. Journal of Med. Sciences*, March, 1888.

STIMULANTS TO BE AVOIDED IN THE TREATMENT OF SKIN DISEASES.—In an article on diet in cutaneous affections, by DR. G. H. FOX, the following suggestions occur: One very important point to be considered in preparing a diet list for patients with skin disease is the effect of alcohol, tea, coffee, and tobacco in retarding tissue-metamorphosis. To improve the nutrition of the skin, it is desirable that the processes of waste and repair be carried on without cessation. When alcohol or other stimulants are consumed to any extent, this desirable change or reconstruction of tissue is arrested, and the various organs of the body are impaired in the performance of their functions. The effect of beer upon an eczema is as marked as it is upon a gonorrhœa. Dr. Fox has sometimes thought it better for a patient to drink a whole bottle of whisky than a single glass of malt liquor. In cases of pruritus, in private practice, the author has fallen into the habit of forbidding all stimulants, on the ground that they do no good and may do harm. In charity practice it has often struck him as the height of folly to prescribe medicine for patients who are living largely on tea and beer, and whose symptoms would speedily disappear under a judicious regulation of diet. Indeed, it is difficult to appreciate what dietetics will do in the treatment of cutaneous and other diseases unless we move, for the time being, a suspension of the Pharmacopœia.—*Dietetic Gazette*, January, 1888.

PENETRATING GUNSHOT WOUNDS OF THE CHEST.—DR. GOUZIER has published some observations and statistics regarding the penetrating gunshot wounds of the chest occurring in the French expeditions to Formosa and Tonquin in 1883–85. From his work we gather that such wounds showed a mortality of 10 per cent., which is only about one-sixth of that due to similar wounds in recent European wars and in the American war. Apparently, as he suggests, the general employment of antiseptic methods was the cause of this great amelioration. Chest wounds from revolver balls of seven millimetres in diameter generally proved comparatively harmless. Traumatic pleurisy and pneumonia usually terminated favorably, but hæmorrhage, empyema, and compound fractures of the ribs gave much more serious results. He found that the best practice was not to explore unless it was necessary to extract the ball, and not to attempt extraction unless the ball was just beneath the skin or was setting up dangerous complications. In ordinary cases he found the best plan was to close the wound antiseptically; but if there were empyema, to make a counter-opening and to wash out and drain the pleural cavity. Warm antiseptic baths were also found very useful in Tonquin.—*Lancet*, Jan. 7, 1888.

LANOLIN AND BACTERIA.—GOTTSTEIN has found by experiment that lanolin is not decomposed by the agencies that commonly destroy fatty matters, and that the skin to which lanolin has been thoroughly applied is less likely to be invaded by poisonous germs and materials than when lanolin is not applied.—*Therapeutische Monatshefte*, Jan., 1888.

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ACTION OF INDUCTION CURRENTS IN SUBCUTANEOUS INJECTIONS.

For many years there has been a good deal written and said as to the best means of using subcutaneously certain drugs, such as quinine, ergotin, arsenic, ether, camphor, preparations of mercury, and others, without having unpleasant local results follow the injections, but no method that has been suggested hitherto has given favorable results. Physicians that have treated syphilis by the subcutaneous use of preparations of mercury know that the chief difficulties and disadvantages of the method lie in the fact that these preparations cause trouble at the site of the injection.

A solution of the problem has been recently offered by DR. WACHSNER (*Die Wirkung des elektrischen Inductionsstromes auf subcutane Einspritzungen; Deutsche medicinische Wochenschrift*, No. 51, 1887), who proposes to increase the absorptive powers of the tissues by the electric induction current, so that the foreign body will be more quickly removed, and the injected solution act more quickly and with more certainty. Careful dissection of the portion of the skin immediately over the subcutaneous cellular tissue shows that there is an apparatus in connection with the cellular tissue that has the power of strengthening the physiological functions of the vessels, and of causing an acceleration of the stream through them. This is a muscular apparatus that can be made to contract by an electric irritation. We know that the muscles are motive powers for the lymph streams, and the passive movements of muscles capable of causing excitation are more energetic and powerful upon the movement of currents in the vessels than its vital contractions. When such a muscle is made to contract, it of course becomes shorter and thicker. This thickening exerts pressure on the lymph and blood vessels of the skin above the muscle, and these vessels are thereby emptied of their contents. When relaxation takes place, there occurs a quick and energetic imbibition, and all the vessels, the cellular tissue, and the muscle become filled, and the structures in the vicinity are thus affected by the movements and changes of the muscle. When, therefore, a subcutaneous injection is made, and these muscular contractions are provoked, the foreign body is soon disposed of, and disturbances from it are prevented. The return of a portion of the solution to the site of injection is prevented by the valves of the vessels, so that the solution is pressed and carried forward toward the general circulation. A proof of this suction-power is shown by electrization of the diaphragm, or phrenic nerve, in cases of asphyxia by chloroform, illuminating gas, drowning, etc.; the action of the diaphragm draws air into the lungs.

For provoking these muscular contractions the electric induction current is the best means. The constant current requires a large number of elements, and muscular contractions are provoked only on the opening and closing of the currents; and what is needed in the cases of which we are speaking is that the current oscillations should take place in the smallest periods of time possible. In his experiments Wachsner used the Leclanché apparatus, which he considers far preferable to any other battery. For the negative current a small electrode must be used, in order to diminish the resistance. A considerably larger electrode must be used for the positive current. Direct faradization—faradization of the nerve endings in the muscles—should be practiced. In order to bring the current into the neighborhood of the superficial muscular nerves, it is advisable to strengthen the conductive power of the skin, and this is done by moistening the skin immediately before the use of the electric current with a warm salt solution, and by allowing the electrodes to remain for one or two minutes in a glass filled with this solution. By the use of this solution the pores of the hair follicles and of the sweat and sebaceous glands are rendered patent for passage of the current. The site for the injection should be over some powerful muscle, such as the gluteus or the latissimus dorsi. When in the gluteal region it is better to carry the injection through the fascia into

the muscle; but in other regions it should be made in the subcutaneous cellular tissue. Of course it is understood that the needle must be very sharp, and must have been previously disinfected with boiling water, and then thoroughly dried. Immediately after the injection the moist electrodes are applied, the positive to neighboring tissue, while with the negative the operation strokes the seat of injection with considerable pressure. At first a weak current is used, and this is increased gradually until the elevation made by the injection disappears. The sensitiveness and pain usually disappear entirely in four or five minutes, the skin can be pulled up in folds, and should some little infiltration show itself, this can be completely dissipated by using the induction current two or three times.

Wachsner has used this method more than a thousand times, in 45 cases. Of the cases there were 25 of syphilitic disease, 12 cases of hæmorrhage, and 3 of nervous phenomena. In the syphilitic cases a 1.100 solution of sublimate was used, from 8 to 9 mgr. of sublimate being used for each injection. In the cases of hæmorrhage he used a solution of ergotin, in equal parts of glycerine and water, 0.1 gr. being injected. The camphor used for injection was dissolved in 96 per cent. alcohol. It may be suggested that this use of the induced current would be of great service when the blood-injections recommended and used by von Ziemssen are practiced. If the method be as valuable as would seem at first sight, it is possible that in many cases, as Wachsner suggests, the stomach will have to perform only its normal work of receiving and digesting food.

PUBLIC WEALTH VS. PUBLIC HEALTH.

Less than a month ago a notice appeared in the obituary columns of the daily papers of this city, showing that on February 3, 6, and 15, the three children of a family had died of diphtheria in Chicago, their ages being 6, 3, and 1 years respectively. But this announcement caused no commotion or public talk in the city, and certainly none in the State. The matter was not brought before Congress, nor was there a meeting of State Governors to discuss the matter. It does not appear that the family was quarantined, nor that any investigation was made of the origin of this outbreak of diphtheria. Beyond the family left childless no thought seems to have been given to the fact that three children have been carried off by a preventable disease.

About two years ago some one discovered that a cow somewhere down in the State of Illinois had pleuro-pneumonia—at any rate, it had a lump on its under jaw. There was immediately a great commotion in the State, and in adjoining and distant States. Telegrams were sent to Washington, and Congress made haste to pass a bill, creating a new official with a salary, and added him to the Department of the Interior, making this new official a sort of Bureau of Animal Industries; and more than this, the business of the cattle-drovers at the Chicago Stock-Yards was temporarily paralyzed in order to see if some other cows might not take pleuro-pneumonia from the one cow. An embargo was laid on cattle from the place where the cow with the swollen jaw was found. The Bureau of Animal Industries seems to have gone out of existence, and it was probably forgotten until a short time ago, when it was found that the embargo laid in 1886 has not been removed.

Cattle are valuable animals, and it is very important that, since we use them for food, they be kept as free from disease as possible. But are they more valuable than children? Is it more important that cattle be kept healthy, and free from preventable diseases, than children? One diseased cow, it may be said, may cause disease in many human beings. The same may be said of one child sick with an infectious disease. But cattle are worth money, and their loss is a positive pecuniary loss to the owner. The same, and to a very much greater extent, is true of children.

How many cattle die annually of pleuro-pneumonia as compared with the number of children that die of diphtheria—not to mention the other infectious diseases? Is there any comparison between the numbers? Do not the examples that we have cited remind one of straining at a gnat and swallowing a camel? Do not the people of this country owe it to themselves to have more efficient and a more uniform system of supervision of the health of the people?

There is another thing in connection with this question—the compulsory notification of infectious diseases. Whether a municipal government does right in compelling such notification without compensation or not, the fact remains: it is the duty of the citizen to obey the laws. It is probably the case in every city in which there is compulsory notification, and certainly *is* the case in Chicago, that physicians are influenced *not* to report infectious diseases by interested parties. It is not long since a physician (an irregular) was called to see a child sick with measles in a certain hotel in Chicago. He was called by the advice of the proprietor, and was influenced by the proprietor not to report the case, though at

the time there were a number of small children in the hotel. The matter was, as far as possible, kept a profound secret in the hotel. This is one way in which unthinking, careless, ignorant people, aided by legal physicians, toy with human life.

Suppose it had been smallpox instead of measles. The stake for the hotel proprietor to play for would have been so much the greater. People that will not run from measles will run from smallpox. The people living in the hotel would, in all probability, have been exposed to the infection before learning of its presence, and then would have scattered themselves around the city, to other hotels and boarding-houses, thus creating new centres of infection. The punishment for the concealment of infectious disease by a householder, and for non-notification by a physician, should be so severe that such things will be unprofitable in the extreme. Then, perhaps, there would be a considerable reduction in the death-rate from such diseases.

THE DEATH OF HENRY BERGH.

On Monday, March 12, Mr. Henry Bergh, long prominent as the President of the American Society for the Prevention of Cruelty to Animals, died at his home in New York City. To the medical profession, especially in the State of New York, he has long been known as the tireless and unremitting opponent of any and all experiments on animals. But while his love for animals was at times carried to an excess of enthusiasm and zeal, and while he and his agents may have been at times more officious than judicious in enforcing the principles of his society, it must be remembered that his was a work that required enthusiasm and the most ardent zeal, that popular prejudice was against him from the first. Bergh was undoubtedly one of the great reformers, and his work must be measured by general results. To the hundreds and thousands that stand ready to look after the wrongs of human beings, there are but few—very few—that take any thought of the rights and wrongs of dumb brutes. Bergh aroused and quickened the dormant sentiments of pity and kindness for animals. He went about his work in the face of a storm of sneers, ridicule, and abuse that would have discouraged men with less courage, and not so large of heart. It may be truthfully said of him that his work has bettered humanity; on the one hand his influence has brought to his aid the better and more refined classes of society, while his power taught human brutes that they could not wilfully torture dumb animals. Municipal authorities have recognized the humane influence of his work, and State legislatures have made new laws for the protection of dumb animals, police powers have been granted, and dead laws have been reanimated.

Looking at Bergh's work as a whole it must be said that it was, and still is, a great work. Scientific men cannot, of course, look upon his attempts to abolish experiments on animals as other than the results of an honest though misguided zeal—the results of trying to fight an imaginary evil, a practice in which he could see nothing good. But in the legitimate field of the society founded by him there is still much work to be done—and outside the City of New York.

PROPERTY IN LECTURES.

In THE JOURNAL of February 11, we asked and commented upon the following questions:

"Is it proper for a medical reporter having access to the ordinary clinical lectures in a hospital, to attempt to report in full the clinical lectures of a member of the hospital staff, and furnish the same for publication, without submitting a line of his manuscript to the lecturer for his approval? Is it proper for editors or publishers of medical journals to receive and publish what purports to be verbatim reports of clinical lectures without any evidence that such reports have been approved by the lecturer, and without even allowing him an opportunity to read the galley proofs?"

In regard to this matter we have recieved the following from JUDGE M. D. EWELL.

"In answer to this question of propriety permit me to say that this matter not infrequently comes up before Courts of Chancery for decision. There is absolutely no doubt whatever that in thus publishing clinical lectures without the lecturer's consent a legal wrong is committed, for which the courts give an adequate remedy. Should your readers desire the authorities for this statement I shall be pleased to refer to them; but I will not otherwise take up your space."

SOCIÉTÉ DE STOMATOLOGIE is the name of a medical society organized in Paris on February 6, for the purpose of studying the diseases of the mouth, the dental apparatus and the adnexa. Dr. Magitot was elected President, and Dr. Galippe, 65 Rue Sainte-Anne, Secretary. Laryngologists, rhinologists, otologists, ophthalmologists, and specialists in the field of stomatology may join the Society.

VOLUMETRIC RICHES.—The *Gazette de Gynecologie* says: Le Dr. H. Keane a établi, au dernier meeting de la Société Gynécologique Américaine, que la littérature gynécologique s'étrait . . . *enrichie*, pendant ces huit dernières annees, de 804 livres et 7,500 articles de journaux et brochures! ! !

ASSOCIATION ITEMS.

PROPOSED AMENDMENTS TO THE CONSTITUTION OF THE ASSOCIATION.

It must be remembered by the members of the Association that several amendments to the constitution will come up for adoption at the approaching meeting in Cincinnati. As they met with no opposition at the last meeting and would then have been adopted had it not been for the rule requiring all amendments to the constitution to be before the body for a year, it is probable that they will be adopted and become part of the law of the Association at the next meeting. The reasons for the amendments were fully stated by the Special Committee that proposed them. The complete report of this committee can be found in No. 26 of vol. viii of THE JOURNAL. The proposed amendments are as follows:

A substitute for an amendment adopted in 1884 to the second section of the constitution:

Members by *Application* shall consist of such members of the State, County and District Medical Societies entitled to representation in this Association, as shall make application in writing to the Treasurer, and accompany said application with a certificate of good standing signed by the President and Secretary of the society of which they are members, and the amount of the annual membership fee, $5. They shall have their names upon the roll and have all the rights and privileges accorded to *Permanent Members*, and shall retain their membership on the same terms.

From the *fifth section* of the *Constitution*, relating to "*Standing Committees*," the *first* and *third paragraphs* should be stricken out, leaving intact only the second paragraph, relating to the "Committee of Arrangements." In place of the first paragraph to be erased, your committee recommend the insertion of the following important provision, viz.:

The General Committee or Council shall be composed of *two members* from each State and Territorial Medical Society entitled to representation by delegates in the Association, and from the Medical Departments of the U. S. Army, Navy, and Marine Hospital Service. They shall be chosen by the members registered and present at each annual meeting, from each State, Territory, and from the Medical Corps of the U. S. Army, Navy, and Marine Hospital Service, acting separately, on the third day of each annual meeting; each delegation reporting the names of the members chosen to the Permanent Secretary of the Association on the same day, that they may be announced by him at the opening of the morning session of the fourth day. At the first election each delegation shall choose *two* members of the General Committee, one of whom shall serve *one* year and the other *two* years, and at each annual election thereafter one member shall be chosen to serve for two years, thus making the term of office of members of the General Committee *two* years. It shall be the duty of the General Committee, thus constituted, to organize by choosing annually a Chairman and Secretary, and such sub-committees as may be found necessary to facilitate the work that may be assigned to it; to meet annually at the place and on the day preceding each annual meeting of this Association, and as often during that week as may be necessary; to nominate, on the third day of each annual meeting, all the general officers of the Association (none of whom shall be members of its own body), the members of the Committee of Arrangements, the Committee on Necrology, seven members of the Judicial Council, and three members of the Board of Trustees for Publication for election by the Association; to recommend the place and time of holding the next annual meeting; and to consider and report upon all subjects that may be referred to it by vote of the Association. The presence of one-third of the whole number of members elected to the General Committee shall constitute a quorum for the transaction of business. If, at any annual meeting of the Association, it shall be found at the close of the general meeting of the first day that a quorum of the General Committee is not present, it shall be the duty of the President and Permanent Secretary to fill the vacancies in the Committee temporarily by selections from the lists of delegates registered as present from the States to which the vacancies belong.

In place of the third paragraph, the following:

The *Board of Trustees* shall consist of nine members, three of whom shall be elected annually on the nomination of the standing General Committee, and shall serve for three years. It shall be the duty of the Board to provide for and superintend the publication and distribution of all such proceedings, transactions, and memoirs of the Association as may be ordered to be published, and in such manner as the Association may direct; and in doing this, it shall have authority to appoint an editor and such assistants, and determine their salaries, and procure and control such materials, as may be necessary for the accomplishment of the work assigned to it. To further facilitate its work, it shall be the duty of the Secretaries of the Association and of the several Sections, during each annual meeting, or as soon thereafter as practicable, to deliver to the Board, or such editor or agent as it shall appoint, all such records of proceedings, reports, addresses, papers, and other documents as may have been ordered for publication, either in the general sessions or in the Sections. All moneys received by the Board of Trustees or its agents, resulting from the discharge of the duties assigned them, must be paid to the Treasurer of the Association, and all orders on the Treasurer for disbursements of money in any way connected with the work of publication, must be endorsed by the President of the Board of Trustees.

It shall be the further duty of the said Board of Trustees to hold the official bond of the Treasurer for the faithful execution of his office; to annually audit and authenticate his accounts, and present a statement of the same in its annual report to the Association; which report shall also specify the character and cost of all the publications for the Association during the year, the number of copies still on hand, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary.

Should these provisions be adopted by the Association, the Permanent Secretary should be authorized to substitute the name "General Committee" for "*Nominating Committee*," wherever the latter occurs in other parts of the Constitution and By-Laws, and similarly the "Board of Trustees" for "*Committee on Publication.*"

If these amendments are adopted, it will not change the mode of nominating officers for the meeting in 1889, since the proposed General Committee or Council which by the amendments will hereafter form the Nominating Committee, must be elected on the third day of the meeting, and will be announced on the fourth or last day, which would be too late for them to make nominations at the Cincinnati meeting. If this General Committee is formed, it should, however, organize so that it will be an active standing committee, to do such business as may be necessary between the meetings of 1888 and 1889.

SOCIETY PROCEEDINGS.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, Thursday, March 1, 1888.

THE PRESIDENT, T. M. DRYSDALE, M.D., IN THE CHAIR.

DR. H. A. KELLY exhibited

AN ASEPTIC TWO-WAY CATHETER.

A two-way catheter, which will conduct and discharge water and solutions with the utmost freedom and at the same time allow of perfect and ready cleansing after use, is a great desideratum. In the light of the antiseptic surgery of to-day the use of such two-way catheters as were commonly found in the surgeon's bag a few years ago, is in the highest degree dangerous, owing to the necessarily painfully tedious process of cleansing, and the impossibility of ever being able to assure ourselves that they are clean. One of the best ever devised for the use of the gynecologist is Bozeman's. This has been modified by Fritsch and Oldshausen in such a way that the delivery pipe and discharge pipe are two separate pieces, so made that the delivery pipe enters the larger discharge pipe and is held in place by a cap which is screwed down on it while in use. This will be understood better in examining my modification. The objection to this still held, that although easier to clean than any previous forms, it was still difficult, and impossible to assure oneself. I have now added my own modification to this instrument, making it now perfect in its utility and answering all antiseptic requirements.

The syringe as constructed by me consists of three parts. First, the delivery tube which conducts the stream from the hose connected with the reservoir into the uterus. This tube is well curved, and at its entrance is furnished with a knob to hold the hose better. Its extremity ends in a button, with a series of holes around and a little below the outer margin, in the form of a rose, so placed that the stream is thrown out on all sides and directed a little backwards. The remaining two pieces are the two lateral *halves* of the *exit* pipe, which is attached very simply by entering each end in the shallow collar under this *rose*, bringing them together around the inlet pipe and screwing the nut down on the thread on their upper end.

Each side has a fenestra in it, near the point, and is scooped out near its upper end, so that when the two are fitted together there is a good sized hole here. When in use, water flies with force from the holes at the end, washes with it débris and fluid, which enter at once the large fenestra on the sides, are washed down and out of this large hole into the receptacle. When out of use the cap is unscrewed, the halves fall apart, and every part which has come in contact with infection is at once exposed and readily cleansed. The interior ought to be as highly polished as the exterior. Mr. Gemrig, of this city, has made these instruments for me in a highly satisfactory manner. He has made one of solid silver for Dr. Sweetnand, of Canada, which I exhibit here, with that I am now using as well as the older form.

If the nomenclature is to be kept up as in the past, it is the *Bozeman-Fritsch-Olshausen-Kelly Catheter.*

DR. KELLY also exhibited

A COTTON PACKER.

This instrument has been many months on the shelf by my examining table, and is one of the few I am constantly using. I have shown it to a number of my friends, and at a meeting of the alumni of the Woman's Hospital at New York this winter. Its use is simply to pick up a loose wad of cotton placed near the vaginal outlet, and with the vaginæ properly exposed the uterus redressed, to carry it up into place in the fornices and pack in one wad after another with perfect exactitude and any degree of firmness required. It is made of a delicately tapering handle which balances nicely in the hand, terminating in three diverging tips, a little flattened on the upper and under surfaces.

DR. B. C. HIRST exhibited

THE PLACENTA FROM A CASE OF UNIOVAL TWINS.

It was very large in extent, having about twice the ordinary dimensions of a placenta. It formed one mass, with the most intimate anastomosis between the two sets of fœtal vessels. There was in this case hydramnion of one fœtal sac.

DR. HIRST also showed

A PARIETAL BONE PRESENTING A SPOON-SHAPED DEPRESSION.

It had been taken from an infant that died about two days after birth. The labor had been a difficult one, terminated by the forceps; the child had presented by the vertex in R. O. P. position; the pelvis was slightly flattened, head large, O. F. circumference 36½ ccm. At the corresponding point internally there was a deep broad depression of the brain substance. The child apparently died from congestion of, and serious effusion into, the brain.

DR. WM. GOODELL remarked that Ambrose Paré had compared these depressions to the indentation on kettle-drums. The indentation in this case was very typical. After turning in the flat and narrow pelvis, these indentations were very marked. They occupied then the temporal region and not the parietal, the shorter bi-temporal diameter being the one implicated. Hence in turning two mechanical advantages resulted, the small end of the cephalic wedge offered at the conjugate and also a cephalic diameter shorter than the bi-parietal.

DR. JOHN C. DACOSTA wished to know if Dr. Goodell thought turning could always be done in these cases? He spoke of a case that had occurred in his practice when the bone was much more depressed than in the specimen shown. The whole left side of the head was bulged in by a large fibroid of the uterus, which fitted into the depression like a mortise and tenon joint. The pelvis was of good shape and roomy, os uteri wide open and soft, and yet the head, which was at or above the superior strait, in L. O. A. position, would not descend on account of the tumor. As the woman was in good condition and nothing seemed to be going wrong, he let her alone for a time. After a little while, by the aid of some manipulation, the head began to unlock from the tumor and rotated from O. A. to O. P. position, and the child was delivered alive.

This case could not have been turned (as membranes had been ruptured and uterus gripped the child's body itself), and even if it could have been, there would probably have been a dead baby from pressure on the cord during the long delay that would ensue on delivering the head, as the tumor would most likely have locked under the baby's chin. The forceps could not be put on, on account of obstruction to the left side by the tumor.

DR. GOODELL thought that Dr. DaCosta would have had less trouble if he could have turned the child. He did not think the neck would have been caught. He had been speaking before of the mechanical advantages only, and not of the difficulties in the performance of version.

DR. LONGAKER presented the following for DR. HOLMES:

The case of Mrs. B., æt. 50, married at 15 years, multipara, menstruation always scant and painful, is remarkable on account of a series of reflex symptoms, of death from exhaustion and from pain, without organic disease other than ovarian, and of simplicity of operation needed as revealed by autopsy.

Mrs. B. consulted me April, 1886, having been treated elsewhere for muscular rheumatism. Pains were of lancinating character along left sciatic, shooting down to ankle. Examination showed ovarian tumor, probably cystic. Prof. Goodell confirmed diagnosis and advised operation, which patient then and subsequently refused. The chief complaint was at first the pain posteriorly along left leg and thigh, which finally involved similar relations on right side. In the course of a few months a persistent tremor attacked both lower extremities, at first alleviated by manual pressure, subsequently not, and later still extended to arms and hands and later yet to muscles of face and lips, giving much the appearance of violent chorea, interfering markedly with clear enunciation.

During the latter part of life there was oft-repeated and painful micturition, with bloody urine, with violent pain starting in lumbar region and shooting along into the bladder and urethra, raising a strong suspicion of renal calculus.

This, with the other lancinating pains, the tremors and nervous exhaustion consequent upon the many months' illness, caused great suffering, the patient often wringing her hands and grasping her hair in agony. Hypodermics of morphia, ¼ to ½ gr., gave markedly greater relief than same doses by mouth or rectum, even frequently repeated. The apparent increase of tumor was very slow.

Autopsy indicated only slight omental adhesions. Kidneys healthy. The bladder, uterus, and the two attached cysts were removed a few hours after death. The dermoid cyst has a long, slender pedicle, attached to the left cornus uteri. It was situated on the right side of the spinal column, opposite the third and fourth lumbar vertebræ, covered by loops of small intestine and by omentum, to which latter it was slightly adherent. It was at first supposed to be a floating kidney which had undergone conversion into a cyst. Its size, shape and location were suggestive of such an origin. The cyst contained chocolate-colored sebaceous matter. No hair or teeth. The wall contained calcareous plates. The right ovary is the seat of a multilocular cyst the size of an average full term fœtal head. The corpus uteri is undeveloped, the cervix constituting the larger portion of the organ. Evidences of chronic cystitis were present.

DR. M. PRICE said that this question was coming up daily; cases of pelvic disease were being constantly treated by the general practitioner for malaria, rheumatism, neuralgia and other kindred diseases, without making any investigation into the actual condition of the patient. In fact, malaria is becoming extremely fashionable, when there is no apparent reason for the condition. He was then treating a case of ovarian disease in a lady now 47 years old; was married at 15 years, contracted gonorrhœa from her husband at that time; has ever since remained sterile, with scant menstrual discharge and great pain from the approaches of her husband, sometimes the pain being agonizing. She suffers at times from severe pain running down the left leg. Upon examination the ovary was found to be as large as an orange, ex-

cessively tender, and when pressure was made in bimanual examination the patient went into convulsions on the table. He did not know what relation this condition may have had in connection to the trouble in her early married life; of this he was sure, that it was the cause of her barren condition.

DR. LONGAKER also exhibited

THE POST-MORTEM SPECIMENS FROM A CASE OF CARCINOMA UTERI.

The following brief notes of this case are presented for Dr. J. S. Gibbs: L. A., married, æt. 39, always enjoyed good health until five years ago, when her last child was born. Since that time she had suffered much from pelvic pains. Menstruation had been excessive. Patient first seen in June, 1887, when a diagnosis of carcinoma of the cervix was made. The disease had invaded the vaginal walls and the pelvic cellular tissue.

From this date I saw no more of the case until February 6, 1888. She had been free from pain, but hæmorrhage persisted.

Vaginal examination revealed advance of the disease. It provoked such a profuse hæmorrhage that applications of Monsell's sol. were required to arrest it. When the hæmorrhage was under control, pledgets of cotton saturated with terebene and olive oil (1–4) were packed against the cervix according to the plan of Betrin, of Geneva. This medication diminished the offensive odor, but I strongly suspect it had something to do with the rather untimely demise of the patient.

In a few hours from the time of the application she went into a somnolent state from which it was difficult to arouse her, with almost complete suppression of urine and strangury, and death in thirty-six hours. A peculiarity of the case was absence of cachexia and emaciation.

Autopsy: The cervix was extensively infiltrated and ulcerated. The corpus shows a few nodules. The ureters are dilated, as are also the pelves of the kidneys.

DR. G. E. SHOEMAKER thought that the statement that death was probably due to an application of terebene should be carefully considered. He was constantly using and observing the use of the drug internally in much larger quantities than could be absorbed from such an application, without sign of irritation. Might not the death from uræmia have occurred independent of its use?

DR. LONGAKER believed that the application of the terebene did hasten death. The strangury and suppression came on quickly after it had been used. The case lacked some of the ordinary symptoms of uræmia.

DR. WM. GOODELL exhibited

A SPECIMEN OF CONJOINED TWINS,

which had been presented to him by Dr. Junius F. Fuller, of Roxborough, N. C.

The specimen was a perfect one. The bodies were united at the hips and there were three feet in common. Some years ago an analogous living specimen of conjoined twins was on exhibition in this city, and he had brought them before his class at the University and had given a lecture upon the subject. From investigations then made he found that this form of conjoined twins was not a very rare one, as Aldrovanus and other old writers had described and figured them. The specimen which he presented must have been aborted at the third month of uterogestation.

DR. GOODELL also presented

A SPECIMEN OF HYDROSALPINX.

It was the largest specimen he had ever seen; although he had met with much larger specimens of pyosalpinx. The case had been treated by many gynecologists and the true condition had not been recognized. There had followed the operation a complete relief from pelvic pains, but menstruation had continued up to the present time. The periods were, however, becoming less frequent. Since it was contended by some eminent surgeons that, when menstruation continued after the removal of the uterine appendages, some of the ovarian stroma must have been left behind, he wished to call the attention of the Society to the complete extirpation in this case of both ovaries and tubes. Although the former were more or less adherent, it was evident from the specimen that not a particle of ovarian stroma was left behind.

DR. M. PRICE said he had seen two cases in his practice where the menstrual discharge did not cease after the removal of the appendages. In one case it lasted for a year and a half, in the other six months. He had no doubt but that Dr. Goodell's case would show the same result. There was but little doubt in the mind of most operators that the removal had not been complete.

PRESENTATION TO DR. GITHENS.

DR. W. H. H. GITHENS, who resigned the secretaryship of the Philadelphia Obstetrical Society the first of the year, after an uninterrupted service of eleven years, was presented this evening, in the name of the Society, with a very handsome mantel set, including clock and side ornaments, in recognition of the very valuable services he had rendered the Society during his long term in office.

OFFICERS FOR THE ENSUING YEAR.

President—Thos. M. Drysdale, M.D.
Vice-Presidents—Chas. H. Thomas, M.D.; J. C. Da Costa, M.D.
Secretary—J. M. Baldy, M.D.
Treasurer—Alfred Whelen, M.D.
Curator—T. Hewson Bradford, M.D.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, February 22, 1888.

W. W. KEEN, M.D., IN THE CHAIR.

DR. THOS. J. MAYS read a paper entitled

APEX EXPANSION VERSUS PURE AIR IN PULMONARY CONSUMPTION.

(See page 325.)

DR. W. W. KEEN: These are very practical ques-

tions presented for discussion. Change of climate involves expense, separation from friends, interruption of employment. Can we obtain equal benefits by home gymnastics or change of employment? There is also a novel question raised as to purity of air. These are points that should be discussed.

DR. WILLIAM OSLER: The last statement of the paper contains a very important truth. With imperfect expansion there is a liability to clogging of the interstitial circulation in the apices and accumulation of tissue debris which may afford a nidus for the development of the bacillus tuberculosis. The condition of activity of this interstitial circulation differs very much in different individuals. We know but very little yet of the conditions which determine the development of tuberculosis. In part, at least, it is like the old parable of the seed and the sower: the nature of the soil will favor, retard, or prevent the growth. That the bacillus of tubercle will not grow in every soil is demonstrated by autopsies in large general hospitals. At Blockley, we will find in every hundred sections, say, fifteen or twenty cases with the usual lesions of phthisis; in fifteen or twenty there are no excavations, the lung not extensively tuberculous, but at the apices are small areas of induration, caseous nodules, and a few peripheral miliary nodules. The soil has not been congenial, and the development of the bacillus was restricted. Without bacillus, no tuberculosis; and that opinion is shared by ninety-nine out of every hundred clinicans of the day.

DR. EDWARD MARTIN: While connected with the department of physical education at the University of Pennsylvania, I had an opportunity of studying the effect of exercise on chest development. Lads admitted with narrow lungs and supraclavicular depressions suffer, after moderate exertion, with embarrassment of pulmonary circulation. The right heart is congested and there is evidently blocking of the blood current in the lungs. After six or eight months of carefully regulated exercise, there is a change in the local condition; no more obstruction is offered to the right side of the heart than elsewhere; the blood-vessels respond to the extra demand put upon them. With this free circulation goes an increase of chest girth, from an inch to two or two and a half inches in six months. Inspiratory exercises are nearly always given these young men, especially those with that shape of chest which we are taught predisposes to phthisis. Among these exercises is prescribed deep breathing, with or without movement of the arms. The arm is raised from the body to a right angle by the deltoid. After that the lifting is done by the serratus magnus, the most important inspiratory muscle. As the arm is carried nearer to the head, the insertion and origin of the serratus are approximated and the muscle works at a disadvantage. For this reason expiration is practiced as the arms are carried up, and inspiration as they are brought down. Exercise should be made vigorous enough to stimulate the heart action. Slow motions, as a rule, do not strengthen the heart, but have a local effect, whereas the object in these cases is to make the circulation free and the air-tubes pervious.

DR. C. W. DULLES: Dr. Mays has done good service by calling attention to the fact that the conditions to secure which consumptives are recommended to live at high altitudes can be replaced by simple measures. My observation, though limited, corresponds with that of Dr. Mays, and I think that all of us have been struck with the fact that there is no direct ratio between the percentage of cases of phthisis and the breathing of impure air. We often see a number of persons huddled into small, unventilated rooms, with filth and drink and all the factors of disease, and yet apparently in blooming health. In such cases the men, who are engaged in active employment, and the children, who run about in the streets, enjoy better health than the women, who have less active exercise and who bend over wash-tubs or sewing work.

DR. GEORGE E. SHOEMAKER: I heartily agree with Dr. Mays that apex expansion is an important part of the treatment of incipient lung disease. A very important point is raised as to the action of rarefied air in expanding the apices. In localities that are warm, moist and low—like Florida, for example—there is no such effect, and almost the sole benefit, as far as the climate is concerned, is from the patient's ability to be outside all the time. Now would it not be better to send more of our patients to a climate where direct good is gained by the more thorough ventilation of the lungs, reserving for Florida the very weak and those liable to excessive hæmorrhage or to heart failure? In regard to impure air, we must remember that many of those persons who enjoy good health in spite of their home surroundings, live out of door most of the time, the children in particular, living upon the doorstep or in the street, except in stormy weather. In the same way at mountain and seaside resorts, the small and uncomfortable rooms drive visitors out into the air; and whether or not ozonized or rarefied, it is pure, out-of-door air.

DR. MAYS: It is rather unfortunate that Dr. Osler did not confine himself to the topic of the paper and discuss the main points of the subject in his usual able manner. I purposely avoided all except an incidental reference to the bacillus; but I must now say that I cannot accept the dictum, "no bacillus, no tuberculosis." It seems very strange that if the bacilli need a soil in which to develop they should be able to penetrate into that portion of the lung which is hardly ever expanded in phthisical patients. Why, if you take the two sexes and put them side by side in the same employment, do the men become diseased in greater proportion than the women? Why this fondness of the bacilli for one sex? I must also dispute that point that ninety-nine out of every hundred clinicians accept this dogma. Though born in Germany, the doctrine is already losing ground among the Germans.

I wish in conclusion, to make a statement which I should have embodied in the paper, that, according to the latest researches, the apices expand more in the recumbent than in the erect position; therefore, a person inhales more air during sleep than in waking hours.

DR. WM. S. STEWART presented

AN IMPROVED OBSTETRIC FORCEPS.

I take it for granted that there is a large majority admitting their necessity, and the great benefit they are to the lying-in patient. Therefore, I will content myself in endeavoring to point out the advantages of having parallel handles, so that the application of either blade first can be made at will, as the exigencies of the case may require. The improvement is not restricted to any special form of blade, but can as readily be applied to the straight as to the curved, its use being equally effective with either form.

The first object, for which I was most solicitous, was to be able to have an instrument that could be used readily in presentations in which it might be desirable to apply the second blade first, as sometimes in the second position of the head when jammed into the cavity of the pelvis and rotation to the antero-posterior diameter has been prevented by a narrow, contracted passage. In all such cases there will be no difficulty in applying and adjusting the first blade; but occasionally it is impossible to apply the second in this condition of the presentation, the only remedy being to reverse the order by applying the second blade first, running the risk of injury to both mother and child in the recrossing of the handles. in order that they may be locked before making traction. This we have overcome by having the handles made parallel to each other, and without overlapping, as in the ordinary instrument. Each handle has its own independent lock, the two being connected by a plain bar, which will admit of adjustment, no matter which blade is applied first.

To overcome the danger of slipping, and to secure the grasp on the fœtus, it was necessary to devise some method of reversing the direction of the handles, in order that traction could be applied. To accomplish this a double lever was devised, one part on each handle, and each working on the same pivot or fulcrum; to this the traction is applied, resulting in a power perhaps superior to anything we could have expected.

The compression to the fœtus is no longer in proportion to the power in the grip of the hand applied to the instrument, as in the cross-handles, but is regulated simply by the resistance to be overcome; consequently, all fear of the slipping of the instrument is obviated, and the only force that is necessary to be applied is for the delivery of the fœtus, serving at the same time for compression and traction. The compression, however, is controlled by a shoulder made on the toggle-joint, preventing any risk to the child, and its limit corresponding to the position of the blades of the cross-handled instrument when the handles are in apposition. Should there be any irregularity of application, and consequent difficulty in locking, we have devised a coned hub with a winged nut, which, though the handles may be at an angle of twenty degrees, enables us to adjust them accurately. The advantages of this improvement, as experience has demonstrated, are summarized as follows: *First.* The application of either blade first. *Second.* The impossibility of the slipping of the blades when properly applied. *Third.* Moderate and even compression, the degree of compression being regulated by the amount of resistance. *Fourth.* Greater facility for making traction.

DR. LONGAKER: The only advantage of this modification of Dr. Stewart's is that the forceps is not so likely to slip. This is due to the parallelism of the blades, which is maintained even though the blades be not on opposite sides of the child's head, and in very large heads where it is difficult to recross the handles. There is in existence another device for the same purpose—a very simple one—a mortise lock at the end of the handle. Personally, I think the forceps introduced by Sir James Y. Simpson can not be improved upon.

DR. PACKARD: I ought, perhaps, to speak with some diffidence on obstetrical matters, as my practice in that line has of late years been but limited. Yet I can but recall the teachings of Professor Hodge, and the extremely practical instruction given the students of my day by Dr. Joseph Warrington, which found abundant confirmation in my experience.

We were taught that the forceps should never be applied unless the os uteri was dilated or dilatable; that they should be introduced with the utmost gentleness, the surface of the child's head being the sole guide; that ready locking (and no force was ever to be used to effect this) was the test of proper application; that under no circumstances was any leverage to be exerted by means of the mother's tissues; that the left hand of the operator (applied at the lock, the tip of the forefinger against the child's head, to detect any slipping of the blades) should be the fulcrum, the instrument being then used as a double lever, so as, by a gentle swaying motion from side to side, to coax the child's head through the passage. This side to side movement was strongly advocated afterward by the late Dr. Albert H. Smith, whose experience and authority on such matters must be conceded. Under all circumstances, except in certain abnormal positions of the child's head, the blades were to be applied with their long axes parallel with the occipito-mental diameter; and they had to be accurately opposed to one another in order to lock. Now, it seems to me, in the light of my own experience, that the difficulty of recrossing the handles ought not to be such as to render a special mechanism needful in order to avoid it. And I cannot but think that the deviation of the blades from parallelism, however brought about, involves danger.

When the mother's forces are inadequate to effect delivery, I think the time has come to use the forceps; and to obviate the necessity of a long-continued grasping of the handles, they may be tied together with a handkerchief, or with any other convenient band, as soon as the blades are accurately applied to the head. The compression so made is often necessary to the delivery; and on several occasions I have myself felt the bones of the head give way under the grasp of the instrument, but the mother was unharmed, and the children lived. As to forcible traction, I have heard of the child's head being torn off; I have several times seen a strong man brace himself with one foot against the bed, and

apply his whole power to drag the child from the mother. In one case I have known this practice to result in the tearing away of part of the cervix, laceration of the vaginal wall, and permanent damage to the mother's local and general health. In the old style of forceps—and the Hodge pattern has always seemed to me the best—we had in each blade, used singly, a vectis; in one handle a blunt hook, an instrument often of great value; the other was a sharp hook, covered, when not in use, with a steel cap screwed on. Such a combination of instruments, which is very convenient in a practice involving long distances, cannot be, or at least is not, offered in the forceps presented by Dr. Stewart.

DR. GEO. E. SHOEMAKER: While this instrument is, no doubt, safe in Dr. Stewart's hands, it might not be so in those of others. That toggle joint is a very powerful mechanical appliance, and the "shoulder" does not limit its action until the blades are quite close together. A moderately large head would not let them get so near together, and a very violent and harmful compression would result from even moderate traction upon the handle.

DR. STEWART: In reply to the first speaker, among the original forceps as represented in the older works were those with parallel blades, but I do not know of anything like this instrument. Of course, I do not claim all the credit of this invention, but share it with the instrument maker, who carried out my ideas. I was induced to have such an instrument made because of a number of complicated cases which came under my care, especially a difficult one in which I was called to assist a friend, who had been trying all night to get on the second blade of the forceps in a very narrow pelvis, where the child's head was jammed (in the right iliac region), and would not rotate. I advised using the second or female blade first, which we did with precaution in recrossing the handles, and the delivery was speedily effected. I am not anxious to use forceps or to make lacerations. My rule is not to apply instruments as long as there is any rebound to the labor.

There need be no fear of the toggle-joint permitting the blades to approach too closely, as the shoulder can be adjusted to any desired distance. It is new to me that a fœtus can be delivered without traction. If a wedge is all that is wanted, the toggle-joint is a better wedge than the cross-joint. The amount of compression is regulated by the necessities of the case. If the mother is left alone, she compresses the head of her child in her labor. In the cases (eight) where I used this instrument, I could not find a trace of its mark twenty-four hours after delivery. I would never use a handkerchief to tie the handle. I believe that in cases of contracted pelvis, where other instruments could not deliver, this could. I had such an experience with a mannikin, in which the outlet was too narrow; failing with the cross-handles, I delivered with my instrument.

CHICAGO MEDICAL SOCIETY.

Stated Meeting, February 6, 1888.

THE PRESIDENT, W. T. BELFIELD, M.D., IN THE CHAIR.

DR. ROBERT TILLEY read a paper on

MONOCULAR DIPLOPIA WITHOUT MANIFEST LESION OF THE AFFECTED EYE.

(See page 322).

DR. HAROLD N. MOYER: I have listened with a great deal of interest to Dr. Tilley's paper, and while I should prefer to hear it discussed by some one more familiar with the subject, I do not feel like letting a paper of this kind go without discussion. The condition of unilocular diplopia as described by the doctor is certainly rare; one that will come under observation but once in a lifetime. His conclusions regarding the pathology of the disease I think are fully justified. We cannot but look upon a lesion of this kind as other than an affection of the brain, and I was struck with the similarity in some of the conditions here described with the condition known as periodical ocular motor paralysis. In those cases we have some of the symptoms which are described in this. In this condition, associated with other peripheral disturbances, there is often distress in the stomach, pain in the eyes and even convulsions. Of the 18 or 19 cases on record four have come to the autopsy table, but the autopsies have not established any definite pathology; whether the lesion was basilar, cortical or nuclear, or the character of the lesion. I fancy it is much the same in this condition, the few autopsies that have been obtained are confusing as to the nature of the basic pathology, the real lesion in the nervous center. While I admire the doctor's exceptionally ingenious theory of an abscess connected with the third ventricle rupturing, I think it was not clearly shown that was the exact condition. It is ingenious, and in the absence of any other explanation it might accepted provisionally.

DR. R. TILLEY: I have only one word to say relative to my suggestion of the possibility of cerebral abscess, and it is founded simply on this fact that there are only two cases in which this phenomenon has been observed, on record as far as I can find, and I have searched as well as the means at my disposal would allow me. I have sent to Washington for several volumes. In the two cases where an autopsy has been made both have been associated with lesions in the cerebral hemispheres, one of them a blood-clot and the other one an abscess in exactly the same location. With this peculiar lesion and these two previous cases with the lesion practically in the same location, we would be confined, as far as speculation is concerned, to some similar hypothesis. In choosing between a blood-clot or hæmorrhage and a possible abscess, I accepted the possibility of an abscess simply on account of this fact: that the child so suddenly got better. I saw her, we will say it might be to-day, and had already prepared for an autopsy; the previous night, the Sister told me she had been burrowing her head in the pillow and complaining of

severe pain in the top when she was delirous, and still this vomiting continued, but suddenly, without any medicine, without additional care, she became better all at once. Food staid on her stomach, she slept well, got up and dressed and in a few days afterward went home on her holidays. I cannot say how long, but about fourteen days, I imagine, from the time she began to get better, abscesses began to appear all at once, and it is the presence of these abscesses that made me suppose that the lesion corresponded to the abscess that was observed at the autopsy table, and by some means these abscesses were the expression of the previous abscesses that had existed.

DR. MOYER: I would like to ask Dr. Tilley if the reflexes and coördination were observed?

DR. TILLEY: There did not seem to be any difficulty in coördination, or anything of that kind. There was quite a good deal of difficulty in examining the patient, just as there is when the patient is under the care of the Sisters, and I had to do the best I could, not as I would, so that the reflexes, etc., were not examined as accurately as I should have done under other circumstances.

The Committee appointed to investigate the

PRIORITY OF THE DISCOVERY OF CHLOROFORM

made the following report:

There are three claimants to the honor of the discovery; Liebig, of Germany, Soubeiran, of France, and Guthrie, of America.

Liebig's Claim.—Liebig claims to have published his discovery in November, 1831. (See *Liebig's Annalen*, vol. 162, page 161.)

Soubeiran's Claim.—Soubeiran claims to have published his paper on ether bichlorique in October, 1831, in the *Annales de Chimie et de Physique.*

Liebig shows (see *Liebig's Annalen*, vol. 162, page 161) that the October number of the *Annales de Chimie et de Physique* was delayed in its publication, and that it did not appear until January, 1832. It certainly is evident that it was not published in October, as it contains the meteorological report for the entire month of October.

Guthrie's Claim.—In the January number, 1832, of Silliman's *American Journal of Science and Art*, we find an article by Dr. Samuel Guthrie, dated September, 1831, in which he says, "A bottle and phial contain alcoholic solution of chloric ether. The contents of the phial are as strong as I could conveniently prepare them, but not equal to some which I made not long ago."

In the October number, 1831, of the same journal, (page 64, vol. xxi) we find an article by Dr. Guthrie, without date, upon a "New Mode of preparing a Spirituous Solution of Chloric Ether," in which he says, "During the last six monts a great number of persons have drunk of the solution of chloric ether not only freely, but frequently to the point of intoxication."

We find a notice to contributors in Prof. Silliman's journal, in which he says, "Communications to be in hand six weeks, or when long, and especially with drawings, two months before the publication day."

Dr. Guthrie's paper on chloric ether must then have been in the hands of the printer in July or August, 1831. And if people had drunk of his chloric ether for six months it would place the date of his discovery in the early part of 1831.

We therefore conclude that Dr. Samuel Guthrie is justly entitled to the honor of first discovering chloroform, and that the publication of his discovery antedates that of either Liebig or Soubeiran.

Respectfully submitted,

F. E. WAXHAM,
N. S. DAVIS, JR.,
E. WYLLYS ANDREWS.

DOMESTIC CORRESPONDENCE

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

PREVENTIVE TREATMENT OF SYPHILIS.

Dr. E. B. Bronson has presented before the Academy of Medicine an able argument, based on theoretical grounds rather than on any practical results as yet achieved, on preventive treatment during the primary stage of syphilis. By preventive treatment, he wished it to be understood, was not necessarily meant abortive treatment, but the employment of such measures as tend in any degree to abridge or mitigate the subsequent course of the infection and its effects upon the constitution. The scheme essentially consists in the local use of antisyphilitics by a method designed to bring the remedy in direct communication with the whole of the affected region in primary syphilis, including more particularly the initial and the diseased inguinal glands. As commonly practiced this regional treatment has been chiefly confined to the use of mercurial hypodermics beneath the initial lesion, unless this was first excised, and into the mass of indurated lymphatic glands. But the plan, Dr, Bronson said, might be easily extended. The field of operation might include all of that district whose lymphatic vessels tend in their course towards the ganglia which are the seat of the disease. When the initial lesion was situated upon the genitals the area most available would consist of the external genitals, the perineum and the upper, inner and anterior aspect of the thighs, together with the inguinal region and lower part of the abdomen. By multiple small injections and by inunctions the effort is made to introduce mercury little by little into the lymphatics, with the hope of its being conveyed to the diseased glands with the least amount of offense to the normal tissues, and yet in sufficient amount to destroy the infectious germs or to retard their multiplication.

When hypodermics are used it is claimed that it is not necessary that the agent should be injected in large quantity in any one spot, nor in a concentrated form; so that $\frac{1}{20}$ of a grain, or less, of the bichloride, introduced in separate injections of not over $\frac{1}{100}$ of a grain each, would afford a more reasonable hope of effectively reaching the seat of the disease than a much larger dose given by the mouth. Dr. Bronson

uses a solution of 1 part in 400 or 500 of mucilage and water, with a small quantity of common salt added. Of this several injections are made, of 4 or 5 minims each, distributed over different parts of the cutaneous area mentioned. The discomfort caused is insignificant, especially if care be taken to avoid any escape of the fluid into the corium, and into the skin of the abdomen and thighs the injections may be repeated daily, or every second or third day. Together with these, but more especially in situations where hypodermics are less admissible, as in the perineum and on the penis and scrotum, inunctions also may be employed; and for this purpose a mercurial soap is preferable to mercurial ointment. It might be said that regional treatment is also constitutional treatment; but he contends that it is something more than this, and that it is at all events much better than doing nothing at all, as is advised by most authorities.

It will be seen that this method of treatment is based on the supposition that syphilis is at first a local rather than a constitutional disease, and also that it is a parasitic disease, which, although the syphilitic germ has not as yet been positively determined, Dr. Bronson considers explains the phenomena presented by it in a more satisfactory way than any other, and constitutes the best working hypothesis for dealing with it. Dr. Bronson believes that when first implanted in the tissues the syphilitic virus is, mainly at least, confined to the spot where the future chancre is to develop; that here finding a favorable soil, it grows and slowly increases until its intrusive presence becomes a source of offense to the tissue harboring it, and that gradually inflammatory action results. From this source of generation the virus contaminates sooner or later the nearest lymphatic glands, which in turn become other sources of supply; until finally, from these multiple foci, the whole organism becomes infected. According to this view the main route to the general circulation is by way of the lymphatics and through the *receptaculum chyli;* though it is possible that an insignificant portion of the veins may pass into it immediately.

According to the opinion generally current among syphilographers, Dr. Bronson went on to say, directly upon its inoculation the syphilitic virus passes into the general circulation; and the incubation pertains, not to any *materies morbi* in the vicinity of the point of inoculation, but to something in the blood; while the initial lesion is the first tangible sign of the blood disease, reflected in some arbitrary and inexplicable manner to the spot where the virus effected its original entrance. Two facts are alleged concerning the primary stage of syphilis upon which the symptomatic character of the initial lesion is based: 1, that an individual who has been inoculated with syphilis has always acquired immunity from any subsequent inoculation of the syphilitic virus before the chancre develops; and 2, that extirpation of the chancre does not prevent the regular course of the disease. While it is true that, as a general rule, auto- and reinoculation in the primary stage fail to produce any perceptible effect, a sufficient number of cases have been reported to show that the rule is not invariable, and that, if immunity is the test of general saturation with the syphilitic poison, we have to conclude that the chancre is not positive evidence of constitutional disease; and hence cannot be its symptom.

It can hardly be said, he continued, that the results of excision make conclusively either for or against the hypothesis of the local character of primary syphilis. As a manifestation of the primary stage the chancre is hardly of more importance than the accompanying adenopathy. That the indurated lymphatic glands in the vicinity of the initial lesion are contributory sources of infection there is little cause to doubt; and were the initial removed, they would doubtless still suffice to contaminate the system. While, then, it cannot be affirmed of any period in the course of the malady that the disease is strictly limited to the site of the initial lesion, the proposition that syphilis is at first essentially a local disease remains still uncontroverted. An infection whose limits are circumscribed and more or less definite is a very different thing from one that has already taken possession of the entire organism.

As to the value of medicinal antisyphilitic treatment during the primary stage, he said, there is a diversity of opinion. While it is pretty generally conceded that the employment of mercury in this stage tends to retard the appearance of constitutional symptoms, the apprehension has been expressed by some that, in repressing the outward manifestations of infection, we are risking a more serious implication of internal organs. There is an inconsistency, however, in the idea that for the month or so of primary syphilis the same remedy is to be shunned, because of dangerous after-effects, whose continued employment during the years of the constitutional disease is accepted without demur.

Even though mercury does act as an antiseptic in syphilis, Dr. Bronson thought it very questionable whether it can have any effect upon germs circulating in the blood, and that it is much more probable that the effect would be exerted where both the germs and the mercurial would be apt to accumulate, as at such places of elimination as the skin, or where deposited in the tissues. That mercury does exert a most decided influence upon the local manifestations of syphilis when topically applied there is undoubted evidence; then why should not this potent influence be brought to bear directly upon these local lesions which are also dangerous foci of infection in the primary period of the disease?

In the discussion of the paper Dr. E. L. Keyes said that he would have been glad if Dr. Bronson had presented some practical results of the method advocated by him. Personally he believed that the disease becomes general from the time that it is acquired, and that the virus therefore gets beyond the lymphatic chain before the appearance of the initial lesion, which occurs only after a period of inoculation. He related a case in which, notwithstanding the complete excision, within twelve or fifteen hours after suspicious connection, of a small livid papule on the dorsum of the penis, the most marked constitutional symptoms subsequently developed. In this instance there was no further trouble whatever about the local lesion, and not the slightest enlargement of

the inguinal glands. The objection to local treatment before the diagnosis of syphilis had been established with the only agent which was of any service during the subsequent course of the disease, consisted in the fact that it was likely to throw more or less discord into the life of the patient; while, if constitutional symptoms did occur, they were apt to run an irregular course. He then related the case of a medical student who, contrary to his advice, commenced a mercurial course in consequence of a slight abrasion of the prepuce. At the end of six months, no evidence of syphilis having in the meanwhile presented itself (if the enlargement of a single one of the post cervical glands were excepted), he gave up the treatment. Within two years, however, he became the subject of hemiplegia, and eventually died of syphilitic brain disease. As a rule, he believed it was much better to delay treatment until the diagnosis was confirmed by the appearance of secondary symptoms. Otherwise a patient might be treated for syphilis who did not have the disease at all; and he referred to an instance in which a gentleman who never had the disease took bichloride of mercury for twelve years in consequence of a mistake of this kind.

Dr. R. W. Taylor, while agreeing with Dr. Bronson that syphilis is at first a local affection, was convinced that neither cauterization nor excision would prevent constitutional infection, and stated that there was already evidence enough to show that the disease cannot be exterminated at the radicals. He thought, therefore, with Dr. Keyes, that it was most rational to begin the treatment with the secondary stage, since by so doing a more orderly sequence was secured, and the moral effect upon the patient was also much greater. In primary syphilis the circumstances were entirely different from what they were later on, as we had to deal with a nascent disease which exhibited marked activity, and hence the most powerful remedies were required to destroy the new growths so rapidly forming. He believed it was impossible, however, to safely employ mercury, the only agent at our command for this purpose, in sufficient quantity to have the desired effect. As far as we could judge, mercury acted by causing fatty degeneration of the syphilitic cells, and as these cells did not become matured until the appearance of constitutional symptoms, it seemed to him irrational, as a rule, to use this remedy until the secondary stage of the disease was reached; especially since it had been shown that syphilis does not run the tractable course in those who are treated early as in those from whom mercury is withheld until after the primary stage.

In concluding the discussion, Dr. Bronson said that in the paper he had acknowledged that his views were based largely on theoretical grounds, and he had merely endeavored to point out the indications which called for early treatment. If the disease was primarily constitutional, no such indications existed, while the fact that the disease was primarily local did not imply that excision of the initial lesion should abort it. In his argument he had expressly discarded excision as a means of abortion, because by the time the chancre appeared the disease had advanced beyond the lymphatics. In order to abort it, it would be necessary that all the foci of infection should be eliminated, and this had been proved to be impossible. Believing, however, that the disease was still local, he thought it was philosophical to treat it regionally, and thus counteract the infection as far as possible in this early stage. The objections which had been urged to such a course seemed to him altogether trivial, and he felt confident that any patient would prefer to take the chances of this prompt treatment rather than do nothing until the fully developed symptoms of the secondary stage presented themselves. Although he had no results to offer, he could abundantly testify from his personal experience that the method was entirely feasible, and he certainly thought it was worth a fair and systematic trial.

P. B. P.

CHARITY HOSPITAL OF NEW ORLEANS.

Petition of Medical Students of Tulane University of Louisiana, with Reference to the Appointment of Resident Students—Reply of Joseph Jones, M.D., President of the Louisiana State Medical Society.

MEDICAL DEPARTMENT OF TULANE UNIVERSITY OF LOUISIANA,

NEW ORLEANS, February 13, 1888.

To Professor Joseph Jones, M.D., President of the Louisiana State Medical Society.

Sir:—It is with feelings of great pleasure and satisfaction that we, the undersigned, students of the Medical Department of Tulane University of Louisiana, acknowledge your efforts to have repealed the Legislative Act of 1886, whereby the selection of medical students for positions in the Charity Hospital was restricted to applicants then resident in the State of Louisiana.

Believing, as we do, that a better selection can be made by choosing the most worthy, regardless of section or State; and furthermore, believing it to be of the greatest importance to have the ablest and most proficient students as sub-medical attendants in immediate charge of the various wards of the institution, subservient to the orders of the attending physicians and surgeons, thereby securing the most careful and intelligent attention, medical and ministerial, to the thousands of suffering poor who seek the comfort and shelter of this noble institution to be cured of their diseases and healed of their wounds; and believing, furthermore, that the continued enforcement of said act will tend to impair the growth of the Medical Department of Tulane University, said Medical Department having been enabled to offer her most proficient students to the service of the Charity Hospital *regardless of section or State*, and at the same time offering, as an incentive to all students desirous of so doing, the opportunity to compete in examinations, necessary to appointment, to resident studentship.

Whereas, the continued prosperity of the abovementioned University, and the interests of the Charity Hospital, are matters of great importance to us; therefore we respectfully ask that you, in your official position as President of the Louisiana State

Medical Society, give this matter the attention it deserves, and use your efforts to have it brought before the next Legislative Assembly, urging its repeal.

We, knowing your devotion to your chosen profession, to the State of Louisiana and to the city of New Orleans, to the Charity Hospital, to which you have given so many years of valuable service, conferring benefits to suffering thousands, whom you have treated within its walls, whose testimony can be had from many portions of the civilized world; a knowledge of the above facts makes us feel that we can ask this of you with the confident assurance that your best efforts will be expended in its accomplishment.

We know your kindly regard for ourselves, and your untiring efforts to place us in the possession of the most valuable practical and advanced ideas in medical science; and appreciating your disregard for self-interest and advancement, we hope to emulate those noble and elevated sentiments whereby we can rise superior to sectional thought, and render justice where merited. We hope that your efforts may be strengthened to the accomplishment of the purpose as herein set forth; and again asking that you give this matter your attention, and use your best efforts to have it brought to the attention of the Legislature of Louisiana, we hereunto subscribe our names.

(Signed) A. W. BOREN,

and by 160 other students of the Med. Dep't of the Tulane University of Louisiana.

156 WASHINGTON AVENUE, 4TH DISTRICT,
NEW ORLEANS, LA., February 15, 1888.

To A. W. Boren, and the medical students of the Med. Dep't of Tulane University of Louisiana.

Gentlemen:—I have the honor to acknowledge the receipt of your communication of February 13, 1888, and beg leave to submit the following: The act to which you refer, containing the proscriptive legislation regulating the mode of selecting the resident students of Charity Hospital of New Orleans, was passed by the General Assembly of the State of Louisiana at the regular session of 1886, Act No. 47, "Making appropriations to defray the ordinary expenses of the State Government." . . . "Approved July 3, 1886, by S. D. McEnery, Governor of the State of Louisiana." The following is the portion of Act 47 which relates to the subject referred to in your communication:

"Charity Hospital in New Orleans. To support of Charity Hospital in New Orleans for year ending June 30, 1887, forty thousand dollars. For year ending June 30, 1888, forty thousand dollars: *Provided*, that none but resident Louisianians be admitted as resident students. Act of the General Assembly of Louisiana, 1886, p. 72."

We will not discuss the question of the legality of an act of the General Assembly of Louisiana, which makes an appropriation for the support of the destitute sick, contingent upon the performance of an act by the Board of Administrators, of which His Excellency, Governor S. D. McEnery, is President, which related solely to the nativity of the students to be appointed, and not to the mode of expenditure of the funds devoted to such charitable purposes as the purchase of food and medical supplies, and the payment of the salaries of the house surgeon, assistant house surgeon, treasurer, and other employés of the hospital. It is more important that we should inquire into the official interpretation of the special and proscriptive legislation of Act 47.

Through the courtesy of Edwin Marks, Esq., Secretary and Treasurer of the Charity Hospital, we have been able to make the following extract from the letter of Governor S. D. McEnery, of February 9, 1887, giving his *official* interpetration of that part of Act 47 which relates to the class of students to be selected as resident students:

EXECUTIVE DEP'T STATE OF LOUISIANA,
BATON ROUGE, February 9, 1887.

Edwin Marks, Esq., Sec'y Charity Hospital, N. O.
Dear Sir:— . . . . My interpretation, in the Act of the General Assembly referred to, of the words "resident Louisianians," is that they mean citizenship. Any citizen of the State is a Louisianian, and the words do not imply or mean that the person should be native born. I presume that your inquiry is made in order to ascertain whether the medical students at the Tulane University from other States can be admitted as resident students in the Hospital, from the fact of their residence in the State during the time they have been pursuing their studies. This residence is not sufficient. If the student is under age, he of course cannot select his residence; but if he is of age and came to the State with the intention of acquiring a residence in the State, and of remaining permanently here, then he is entitled to admission.

It is the intention the act of residence coupled with the intention of remaining permanently, which fixes the residence, and which will entitle the party to become a resident student of the hospital. (McRowan vs. McGwin, 15 and 637.)

Respectfnlly yours,
(Signed) S. D. MCENERY, Governor.

Regarding the action of the General Assembly of Louisiana of 1886, in Act 47, relative to the appointment of resident students in the Charity Hospital as unjust and unwise, and as injurious to the best interests of the students and patients, I embraced the earliest opportunity to obtain the sense of the highest medical authority in the State, to the end that the obnoxious clause might be repealed, or rather that such legislation might never again be repeated.

To accomplish this end, I attended the meeting of the Louisiana State Medical Society held in the month of April, 1887, in Alexandria; as will be seen from the following extracts from the proceedings of that Society:

Resident Students of the Charity Hospital of New Orleans, La.

Dr. Joseph Jones offered the following:

WHEREAS, The Charity Hospital of New Orleans receives the distressed and destitute, sick and wounded, of all the States of the Union, and all the nations of the world. Be it

Resolved, By the members of the Louisiana State Medical Society, that the position of resident students in the great and noble institution should be open to the competition of all honorable, intelligent and accomplished medical students. Be it further

Resolved, That the General Assembly of the State of Louisiana be respectfully and earnestly requested by the Louisiana State Medical Society to rescind the law enacted by the General Assembly of 1885, excluding all medical students from competition for the position of resident students of the Charity Hospital except natives and residents of Louisiana.

Resolved, That the action of the General Assembly of Louisiana of 1885 was in violation of those true, generous and patriotic principles which have ever characterized the philanthropic citizens of Louisiana.

Resolved, That the President of the Louisiana State Medical Society be empowered to urge the abrogation of this law of 1885, establishing, for the first time in the history of Louisiana, the unwise and illiberal policy of excluding from the competitive examination of the medical service of the Charity Hospital the intelligent and enterprising medical students of other States.

Dr. Joseph Jones supported the preceding resolutions by the following argument:

(a) The object of this great and noble institution is the relief of suffering humanity, the healing of disease, the restoration of the sick to the performance of the active duties of life, and the advancement of the highest intellectual, moral, and physical welfare of the commonwealth.

(b) The generous citizens of Louisiana have not confined their benefits and ministrations to their own citizens. Upon a careful examination and classification of statistics of the Charity Hospital of New Orleans during the period of forty years (1836–1876), we find that 310,659 patients were admitted, and of this number 248,011 were foreigners, 54,403 natives of the United States outside of Louisiana, and only 11,761 were natives of Louisiana. It is evident from these statistics that the noblest and broadest charity has actuated the citizens, and especially the medical profession, of Louisiana, in the charitable ministrations to the destitute sick of all States and countries.

(c) By again throwing open the field for honorable competition of all accomplished medical students, regardless of their nativity, the State of Louisiana will secure the most effective service and achieve the greatest good to suffering humanity.

Duly seconded and carried.

In conclusion, allow me to direct the attention of the students of the Medical Department of the Tulane University of Louisiana, and of our sister States, who may in future desire to compete for the position of resident students in the Charity Hospital of New Orleans, to the following important facts:

1. *That Act 47 is not a law of the State of Louisiana.*

2. The operation of Act 47, as far as the appointment of resident students of the Charity Hospital is concerned, ceases absolutely on July 1st, 1888.

3. Unless the General Assembly of Louisiana, at its subsequent meeting, is induced to repeal this unwise and proscriptive legislation, *the Board of Administrators* of the Charity Hospital of New Orleans will, after the 30th of June, 1888, be untrammeled in their appointment of resident students. They may, or let us hope that they will, act regardless of *State lines*, basing the appointments upon *merit* and *merit alone*.

As your friend and professor, and as a representative of the medical profession, I shall cheerfully comply with your request, and exert any influence at my command to avert similar legislation in the future.

With thanks for the kind and courteous terms in which you have been pleased to couch your petition, and with kind regards, I remain as ever

Your friend, JOSEPH JONES, M.D.,
Pres't Louisiana State Medical Society.

MERCURY IN THE BONES.

Dear Sir:—In THE JOURNAL, Jan. 21, page 95, column "Book Reviews," and in commendation of "600 Medical Don'ts," the review says: "To the other 'don'ts' might be added: Don't imagine that mercury can get into your bones," etc.

What then shall we do with authority so high and so generally accepted as Bartholow? In his "Materia Medica," fifth edition, pp. 248, 249, Bartholow says: "Mercury is deposited in the textures, interferes with the normal nutritive processes, and is found in all the secretions and excretions. A marked degree of anæmia, loss of flesh, loss of hair, eczema, a foul breath, diarrhœa, the stools being very fetid, are the characteristic symptoms of the action of mercury on the solids and fluids of the body.

". . . . . As a result of the changes in the composition of the blood, and of the direct action of the metal on the renal epithelium, albuminuria is one of the symptoms present in cases of mercurialism. Without the use of special means to render it soluble, *and despite the use of such means, sometimes mercury remains permanently in the organism.* When extremely severe cases of salivation were not uncommon, permanent damage to the osseous structures often occurred, *and globules of mercury could be shaken out of the dried bones of such subjects.*" The italics are all mine.

The reading of proverbs and terse dogmas is generally pleasing though misleading, and the time has been when the writers had everything their own way. The proverb writer of to-day is liable to be inquired of occasionally before his sayings are accepted as finalities.

Wishing the addendum to "Don't" above quoted to be correct, I beg leave to ask the writer for the proof. Very truly,

INQUIRER.

["We have never seen any ulceration of the skin or disease of the bones, or paralysis, in consequence of the therapeutic use of mercury, even in cases in which its misuse was carried to the extreme."

Von Zeissl, "Pathology and Treatment of Syphilis," p. 376.

"The attempt which has been repeatedly made by different authors to attach tertiary lesions, and especially lesions of the bones, to the mercury which was administered during the earlier stages of the disease (syphilis), is now shown to be groundless, by abundant evidence. . . Persons who labor with mercury, and who are constantly exposed to its fumes, are by no means subject to affections of the bones. Virchow, who has been quoted as supporting this error, strongly repudiates it in his recent work on syphilis." Bumstead and Taylor; "Venereal Diseases," 1883, p. 734.

The shaking of metallic mercury out of dry bones is about as good proof that it was deposited as mercury during life, as seeing a saddle under a bed is proof that the patient has eaten a horse. When one finds mercury in a dry bone he may allay his excitement by the reflection that the subject from which the bone was obtained was injected with a mercurial preparation after death. There is no earthly reason why mercury should be deposited in bone. So far as mercury causing bone lesions is concerned, do we know of any such thing as mercurial osteitis? We know that mercury is given for syphilitic affections of bone, and with good results. And we know that mercury, given to ptyalism, is frequently valuable in non-syphilitic osteitis.

Are we to believe, then, that mercury can itself cause similar lesions? This is good *similia similibus*, but very poor pathology.

When chemists examine the dead bodies of persons supposed to have died from the effects of mercurial preparations, they do not investigate the bones, but the viscera. They have no reason to investigate the bones. In works on the chemistry of poisons the bones are not even mentioned. And in such cases of poisoning has anyone ever seen any bone lesion thought to have been caused by mercury? The deposition of mercury in the bones is a Thompsonian and old woman's myth. REVIEWER.]

MISCELLANEOUS.

HEALTH IN MICHIGAN FOR JANUARY, 1888.—For the month of January, 1888, compared with the preceding month the reports indicate that pneumonia increased, and that diarrhœa decreased in prevalence.

Compared with the preceding month the temperature in the month of January, 1888, was much lower, the absolute humidity, the relative humidity, and the night ozone were less, and the day ozone was more.

Compared with the average for the month of January in the nine years 1879-1887, diphtheria, intermittent fever, whooping-cough, consumption of lungs, pneumonia, bronchitis, typo-malarial fever, and influenza were less prevalent in January, 1888.

For the month of January, 1888, compared with the average of corresponding months in the nine years 1879-1887, the temperature was lower, the absolute humidity, the relative humidity, and the day and the night ozone were less.

Including reports by regular observers and others, diphtheria was reported present in Michigan in the month of January, 1888, at 57 places, scarlet fever at 54 places, typhoid fever at 39 places, measles at 20 places, and small-pox at 1 place.

Reports from all sources show diphtheria reported at 19 places more, scarlet fever at 14 places more, typhoid fever at 19 places more, and small-pox at 1 place more in January, 1888, than in the preceding month.

A part of the increased prevalence of communicable diseases is doubtless only apparent, because a knowledge of a large number of outbreaks, not otherwise reported, was obtained from the annual reports of health officers during the month of January.

THE MEDICAL ASSOCIATION OF THE STATE OF MISSOURI will hold its next annual meeting in Kansas City, Mo., April 17, 18 and 19, 1888, at Music Hall. A large attendance is expected.

STATE MEDICAL SOCIETY OF ARKANSAS.—The Thirteenth Annual Session of this Society will be held at Fort Smith, April 25, 26 and 27, 1888, commencing on Wednesday, April 25, at 11 A.M. President, W. P. Flint, M.D., of Washington, Ark.; Secretary, L. P. Gibson, M.D., Little Rock; Chairman of the Committee of Arrangements, L. L. Saunders, M.D., Fort Smith, Ark.

PROFESSOR UNNA'S COURSE IN DERMATOLOGY.—On April 1 Professor P. G. Unna, of Hamburg, will begin a series of *half-yearly* courses in the histology, bacteriology, diagnosis, and treatment of diseases of the skin, for physicians wishing to study dermatology. He will build a laboratory for histological and bacteriological work, the material for which he will obtain from his clinic and polyclinic.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM MARCH 3, 1888, TO MARCH 9, 1888.

First Lieut. W. W. Fisher, Asst. Surgeon, sick leave extended one month on surgeon's certificate of disability. S. O. 50, A. G. O., March 2, 1888.

First Lieut. Paul Shillock, Asst. Surgeon (recently appointed), ordered for duty at Ft. Assiniboine, Mont. S. O. 50, A. G. O., March 2, 1888.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY, DURING THE WEEK ENDING MARCH 10, 1888.

Asst. Surgeon E. P. Stone, detached from the Coast Survey Str. "Bache," and to hospital, New York, for treatment.

Asst. Surgeon James F. Keeney, commissioned March 1, 1888.

Surgeon George R. Brush, ordered to the "Omaha" when "Pensacola" arrives at Aspinwall.

P. A. Surgeon Victor C. B. Means, to the "Omaha" when "Pensacola" arrives at Aspinwall.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE FOR THE TWO WEEKS ENDING MARCH 10, 1888.

Surgeon W. H. H. Hutton, to proceed to Brunswick, Ga., on special duty, March 5, 1888. Detailed as President of Board to select site for Gulf Quarantine Station. March 10, 1888.

P. A. Surgeon H. R. Carter, detailed as recorder of Board to select site for Gulf Quarantine Station. March 10, 1888.

P. A. Surgeon Eugene Wasdin, granted leave of absence for thirty days. March 8, 1888.

Asst. Surgeon W. D. Bratton, ordered to examination for promotion. March 7, 1888.

Surgeon G. W. Stoner, detailed as chairman of Board for physical examination of officers and candidates, Revenue Marine Service. February 28, 1888.

P. A. Surgeon F. M. Urquhart, detailed as recorder of Board for physical examination of officers and candidates, Revenue Marine Service. February 28, 1888.

P. A. Surgeon P. C. Kalloch, relieved from duty at Pittsburgh, Pa.; ordered to Marine Hospital, San Francisco, Cal. March 2, 1888.

P. A. Surgeon P. M. Carrington, relieved from duty at Marine Hospital, San Francisco, Cal.; ordered to assume charge of Service at Pittsburgh, Pa. March 2, 1888.

Asst. Surgeon J. J. Kinyoun, granted leave of absence for twenty days. February 28, 1888.